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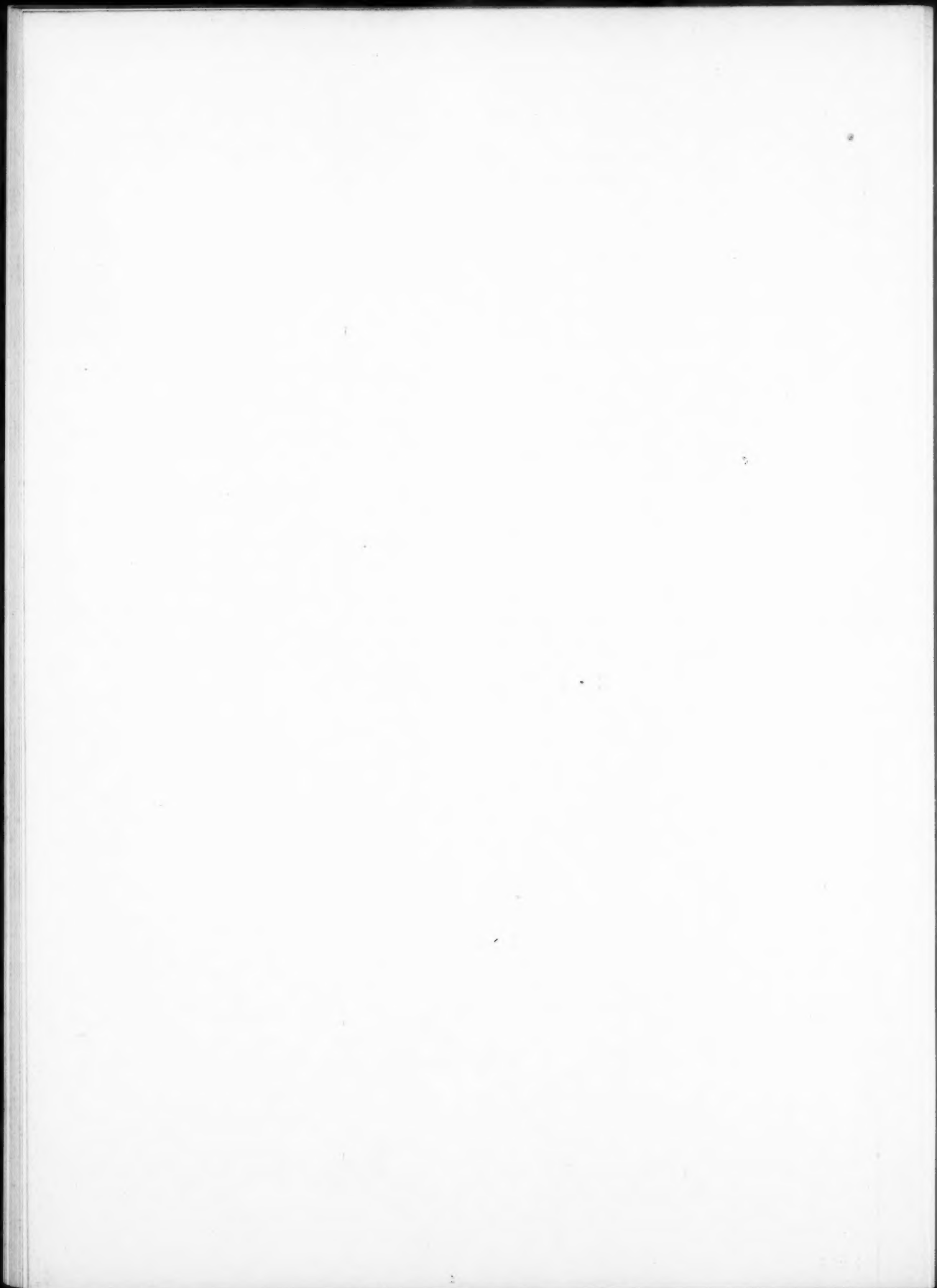
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ARCHAEOLOGICAL NOTES

TWO RECENT ACQUISITIONS BY THE METROPOLITAN MUSEUM OF ART

(1) A PELIKE BY THE MEIDIAS PAINTER

THE Metropolitan Museum has recently acquired a red-figured pelike by the Meidias Painter (figs. 1, 2 and 3)¹ which ranks in importance with the signed hydria in the British Museum² and the two hydriai from Populonia in Florence.³ It is decorated with two scenes, front and back. On one side twelve figures are placed at various heights, forming a subtly interconnected, harmonious group; on the other four larger figures are arranged in a row.

We begin our description with the more elaborate scene (figs. 1 and 3). In the centre a youth, in a richly decorated costume,⁴ with a laurel wreath in his hair, is playing the kithara. All around him are female figures, some with musical instruments—harp, tambourine, and lyre; one holds a tame bird to which a child is stretching out its hand. (The child wears a string of amulets and a band round ankle and wrist.)⁵ Trees, hillocks, and flowers indicate an outdoor setting. One might think we had here another picture of Thamyris and the Muses, for the scene is similar to that on the squat lekythos in Ruvo⁶ where the singer is identified as Thamyris by an inscription. But our singer is not Thamyris. His name is inscribed, and though a fracture runs through it, it can be made out. The initial letter is M, the final letter Σ, with room for five intervening letters; the third is Σ, the second and sixth apparently O. The name can only be ΜΟΣΑΙΟΣ, Mousaios, the Athenian singer, who according to some sources came from Thrace⁷—hence his Thracian furred boots⁸ and costume.⁹ That this is the right interpretation is further shown

¹ Height 18 $\frac{1}{8}$ in. (48 cm.); greatest width 13 $\frac{1}{16}$ in. (34.8 cm.); greatest circumference 43 in. (1.93 m.). Acc. no. 37.11.23. Cf. *B.M.M.A.* xxxiii, 1938, pp. 262 ff. It has been put together from many fragments with no restorations except the missing slivers at the junctures; the surface has considerably suffered in places. The Museum acquired the vase from a private collection. The provenance is said to be Sicily. The composite fig. 3 has been prepared by Lindsley F. Hall, who also added the names in white paint. After many consultations we agreed on every letter.

² E 224. Beazley, *AV.* p. 459, no. 1; *FR.* i, pls. 8-9.

³ Nicole, *Meidias*, pl. 3, 1 and 2. To be published in a forthcoming fascicule of the *Corpus Vasorum*.

⁴ Sleeved chiton, sleeveless jacket, and mantle; from the kithara hang the cover and the ends of the retaining band. The long-drawn-out zigzags on the bottom of Mousaios' chiton and Terpsichora's peplos are a popular pattern on draperies of this period, cf. Studniczka, *Symposion Ptolemaios II*, p. 173, and von Lorentz, *RM.* lii, 1937, p. 209.

⁵ On such amulets and protective bands cf. Wolters, "Faden und Knoten als Amulett" in *ARW.* viii, 1905, Beiheft, pp. 1 ff.

⁶ Nicole, *op. cit.*, pl. 7, 4. On representations of Thamyris cf. Richter in Richter-Hall, *Red-figured Athenian Vases*, pp. 203 f.

⁷ Cf. Rzach in Pauly-Wissowa, *RE.* xvi, s.v. *Musaios*, col. 762.

⁸ On such boots, the Greek ἐμβάδες, and their Thracian origin, cf. Erbacher, *Griechisches Schuhwerk*, pp. 62 f.

⁹ The identical costume appears on the Thracian Thamyris on the Ruvo aryballos, Nicole, *op. cit.*, pl. 7, 4.

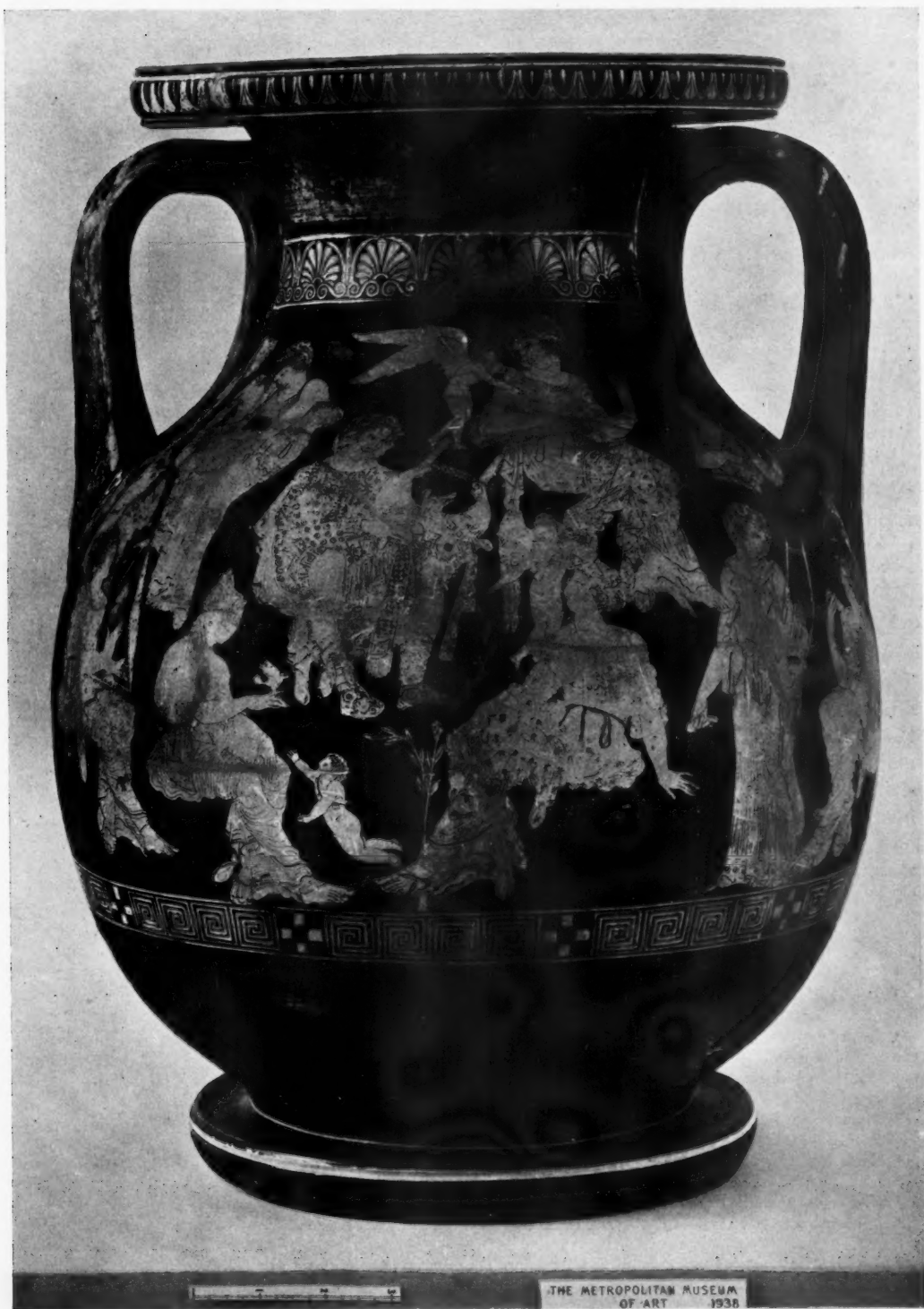


FIG. 1.—PELIKE BY THE MEIDIAS PAINTER. THE METROPOLITAN MUSEUM OF ART

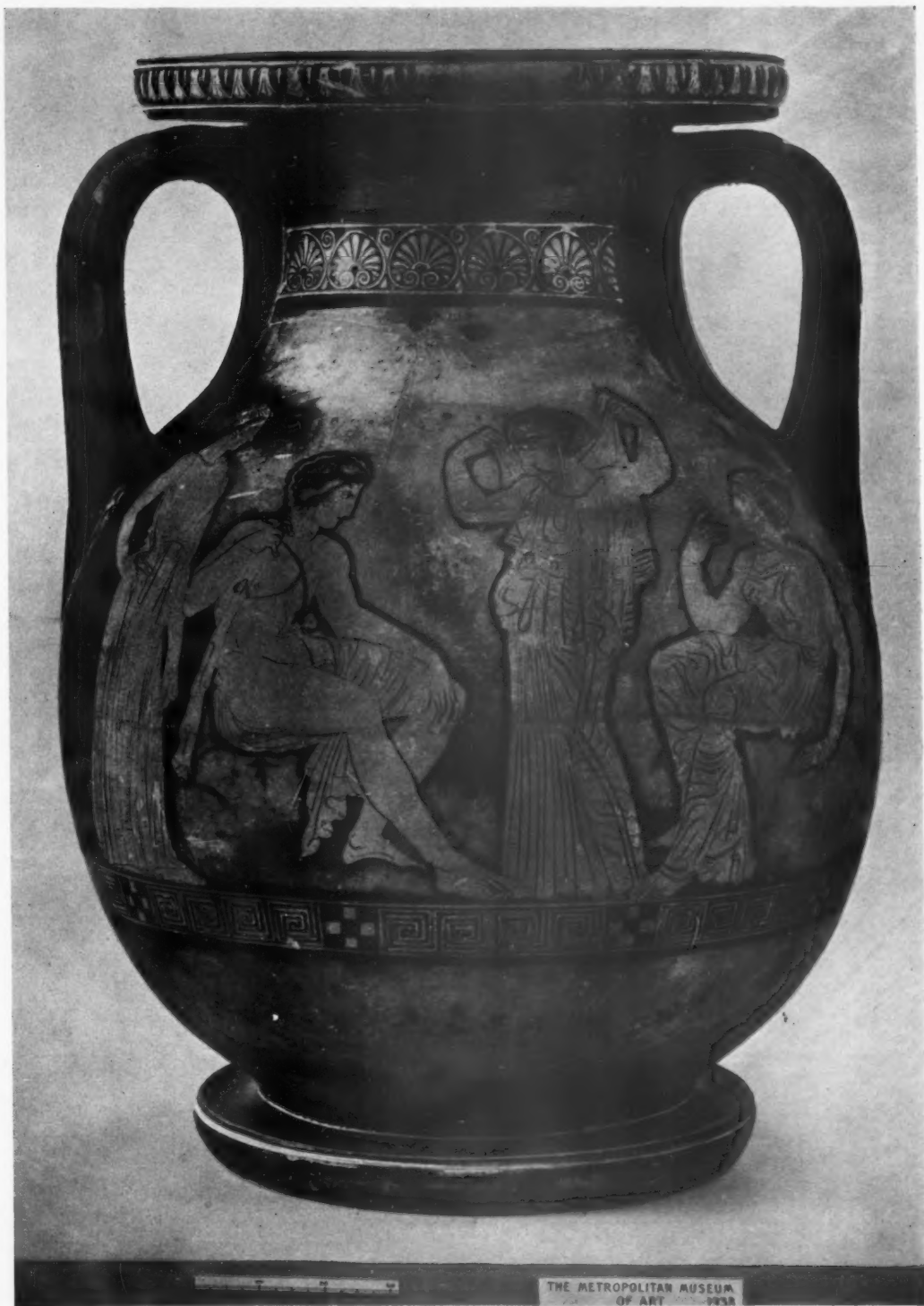


FIG. 2.—BACK OF THE PELIKE SHOWN IN FIG. 1

by the names of the child and the woman with the bird—ΕΥΜΟΛΠΟΣ, Eumolpos, and ΔΗΙΟΠΗ, Deiope, the son and wife of Mousaios.¹

The names of the other figures are also given; some can be read easily, others with difficulty. Four of the women are Muses: ΜΕΛΠΟΜΕΝΗ with the harp; [Ε]ΡΑΤΩ with the tambourine; ΚΑΛΛΙΟΠΗ holding a fillet; ΤΕΡΨΙΧΟΡΑ with the lyre. The radiant figure occupying a prominent place to the lower right, with an Eros hovering over her, is ΑΦΡΟΔΙΤΗ. The little winged creature near Kalliope is ΠΟΘΟΣ. Two other members of Aphrodite's retinue are identified as ΠΕΙΘΩ (seated on the extreme right) and ΑΡΜΟΝΙΑ, represented as emerging above a hillock.

We have here, then, a representation of Mousaios with wife and child making music in the presence of the Muses and of Aphrodite and her retinue. It is the only extant picture of Mousaios as the centre of an elaborate composition; the other known representations—for instance that with Terpsichora and Melousa on an amphora in the British Museum,² and with Linos on a kylix in the Louvre³—are much simpler, consisting of only two or three figures. Eumolpos, the ancestor of the Eleusinian family Eumolpidai, who by ancestral right held the office of hierophant in the Mysteries, appears as a bearded king with sceptre and swan in a picture of the sending of Triptolemos.⁴ Ours is apparently the only certain representation of Deiope known.⁵

It is of special interest that Eumolpos appears on a fifth-century Attic vase as the son of Mousaios and Deiope and that Mousaios is represented as a Thracian, for the literary evidence is confused and much of it late.⁶ Several genealogies are assigned to Eumolpos and these various parents and the chronological discrepancies in the legends led later chroniclers to split up the ancestor of the Eumolpidai into several distinct characters.

Our new vase now supplies fifth-century evidence for (1) Deiope as the wife of Mousaios and mother of Eumolpos. Heretofore our earliest authorities for this were Hellenistic.⁷ (2) Eumolpos as the son of Mousaios. Heretofore our earliest evidence for this was Andron, frgt. 13, probably of the fourth century B.C.⁸ (3) Mousaios as a Thracian. Heretofore our earliest authority for this was Aristoxenos.⁹

Therefore Eumolpos remains a Thracian, even with Mousaios and Deiope as

¹ Photius s.v. Εὐμολπίδαι(1). For the earlier literary evidence, see below.

² E 271; *MonInst.* v, pl. XXXVII; *FR.* pl. 139.

³ *Monumenti ed Annali* 1856, pl. XX. Beazley calls my attention also to the youth named Μοσαῖος on a kylix in the Victoria and Albert Museum, cf. Philippart "Collections de céramique grecque en Angleterre" in *L'Antiquité classique* iv, 1935, pl. XXXI.

⁴ On the skyphos signed by Hieron in the British Museum, E 140; Hoppin, *Rf. Vases* ii, p. 61. Some have thought that the warrior in a similar scene on a kylix in Frankfurt signed by Brygos is meant for Eumolpos (Gerhard, *Tr. u. Gef.* i, p. 21), but that is a mere guess.

⁵ For a mistaken interpretation of a group on an Apulian amphora from Ruvo (*WV.*, Serie E, pl. I; Kuhnert, *JdI.* viii, 1893, pp. 104 ff.) as Mousaios, Deiope, and Eumolpos cf. Wilhelm Furtwängler, *Die Idee des Todes*, p. 407.

⁶ Cf. Diels, *Vorsokratiker* I⁶, pp. 20 ff.

⁷ Istros in scholion on Sophokles *O.C.* 1053; pseudo-Aristotle, *Mirab.* 131, 843^b.

⁸ Schwartz, Pauly-Wissowa, *RE.* i, s.v. *Andron*, cols. 2159 f.; see also Jacoby, *Marmor Parium* A, ep. 15, pp. 72 ff. and *Fragmente Gr. Hist.* ii D, p. 677 (from an Atthis). The "son of Mousaios" mentioned by Plato, *Rep.* ii, 363c has been taken to be Eumolpos; cf. Wilamowitz, *Der Glaube der Hellenen* ii, p. 58, note 2.

⁹ In Harpokration, s.v. Μοῦσαῖος.



FIG. 3. —



3. —SCENE ON THE PELIKE SHOWN IN FIG. 1
(Scale about 2:3)



parents, instead of—as had been thought—only through Poseidon and Chione, daughter of Boreas and Oreithyia.¹

It seems likely, therefore, that there was a fifth-century Attic story² that Mousaios the Thracian singer married Deiope of Eleusis and thus became the father of Eumolpos and the ancestor of the Eumolpidae. Since our vase is almost contemporary with the production of Euripides' *Erechtheus* (421 B.C., Plutarch, *Nikias* 9) it now seems certain that Euripides, who made Eumolpos the son of Poseidon, did not invent the Thracian origin.³

The principal figures on the other side of the vase (fig. 2) are Herakles, seated, with club in hand, and his wife Deianeira, holding up the corners of her mantle. Left and right is a female figure of unknown identity. Above Herakles ΔΗΙΑΝΕΡΑ, above Deianeira ΚΑ[ΑΗ], a little higher up ΗΡΑΚ[ΑΗ]Σ. The figures are among the tallest known by the Meidias Painter, the standing ones being over 21 cm. high. They are not as carefully drawn, however, as those in the other scene.

The black glaze of the background has mostly disappeared, leaving the contour stripes—where the glaze had a double thickness—to stand out prominently. The reason why traces of the letters remain is that here too the surface was thicker than elsewhere, since the inscriptions were painted in red pigment over the black glaze; sometimes the impress of a letter is faintly marked on the clay although the glaze itself has entirely gone.

That the glaze on this side of the vase is in such bad condition is particularly unfortunate, for just under the top border of palmettes there are traces of what might have been letters—and “an inscription in this unusual place might be a signature”;⁴ the British Museum hydria is signed just under the top border. At certain times one can persuade oneself that one sees faint impressions on the clay (occasionally with bits of glaze adhering) of a few letters; but no one letter is certain, and the “letters” may be merely accidental marks.

Besides the hydria in London three important vases are closely related to our new vase—the two hydriai from Populonia in Florence and the squat lekythos in Ruvo.⁵ There are many obvious comparisons between the figures on these five vases—for instance, the Ruvo Thamyris and our Mousaios, the Florence Eurynoe and our Deiope, the Florence Lyra and our Kalliope, the London Lipara and our Deianeira. Headdresses, girdles, spiral bracelets,⁶ lyres, tambourines, laurel trees are strikingly alike in all five scenes. We note the same characteristic renderings—heads in three-quarter view looking upward and downward; slender hands with tapering fingers, sometimes holding objects without properly grasping them; soft, transparent, swirling draperies rendered by multitudinous curving lines which model the forms of

¹ Cf. Hiller von Gaertringen, *De Graecorum fabulis ad Thraces pertinentibus*, 1886; Kern, Pauly-Wissowa, *RE.* vi, s.v. *Eumolpos*, cols. 1119 f. On Eumolpos' Thracian connections cf. also Toeppfer, *Attische Genealogie*, pp. 26 ff.

² The source may be the *Eumolpia* of “Mousaios,” for which see Frs. 11, 12 (Diels²) and in that case the story may be as early as the sixth century; cf. Kern, *De Musaei Atheniensis fragmentis*, *Rostocker Lekt.-Verz.*, 1898, and *Die Religion der Griechen* ii, pp. 141–142, 173–175.

³ I want to acknowledge the help given me by Marjorie J. Milne in working out the relation of our vase to the Eumolpos legends. The above deductions are hers.

⁴ As J. D. Beazley suggested to me in a letter.

⁵ Beazley, *AV.* p. 460, nos. 4, 5, 12.

⁶ Indicated by traces of two bands, originally in applied clay and presumably gilded.

the body; lower legs drawn crossing each other; large feet in three-quarter view with cushioned toes, of which the big toe is sometimes disproportionately large; curving lines incised lightly in the glaze to indicate the hilly ground and the trailing plants; flowers in superimposed clay.¹ And throughout we find the same masterly quality of line—so thin and equable, drawn with such swing and freedom that it is almost incredible that it was traced in glaze. These five paintings must be about contemporary and they represent the high-water mark of the Meidias Painter's work.

(2) A CUP IN THE FORM OF A COW'S HOOF

Another recent acquisition of the Metropolitan Museum is an Attic cup in the form of a cloven hoof surmounted by a red-figured scene (figs. 4, 5).² It is ingeniously made. The lower part is moulded, the upper thrown on the wheel. The texture and color of the horn are rendered by striations in the glaze, the fringe of hair immediately above it by a broad ridge with transverse grooves, the fetlocks by two bumps with grooves for hair. On the inside the upper part is glazed, the lower covered with a red ochre wash.

The scene has a direct bearing on the shape. A herdsman, clothed in a tunic, shoes, furry pelt and cap, is sitting on a rock. He is watching a herd of cows, of which two are depicted wandering in different directions. At the other end of the picture a wolf-like dog is emerging from a cave, down which hangs a tendril of ivy. He is rounding up the herd. In the centre is a tree, under which is a hare in characteristic posture. A little to one side is a shrub. The whole is a sensitive picture of rural life, concisely told, in the manner of Greek epigrams.

A few words about the technique: the whole scene is painted in black glaze variously applied; relief lines are used throughout for the contours of the figures, which stand out sharply in consequence; thinned glaze is employed for some details; a transparent wash suggests the smooth surfaces of cave and rock; mottling conveys the rough textures of the herdsman's pelt and of the coats of dog and hare; irregular shaded lines represent the foliage of the shrub; brown dots imitate the rough bark of the stylized tree. There are extensive remains of an all-over red ochre wash.

The unusual shape and subject suggest the Sotades Painter. But the hand is not his. The Sotades Painter draws his eyes with a small iris placed in the middle or at the top of the eyeball; in our herdsman's eye the iris is a large black dot at the inner corner. The Sotades Painter's chins are squarish; our herdsman's is rounded and strongly protruding. The bull by the Sotades Painter on the stemless cup in Naples³ (fig. 6) has little in common with our cows; legs, hoofs, eyes, tails are differently rendered.

¹ No superimposed clay now actually remains, but it has left traces; originally it was probably gilded, like the bracelets.

² Acc. no. 38.11.2. Height $4\frac{1}{16}$ in. (10.3 cm.). Most of the handle is restored and there is a small repair on the bottom and on the lip; otherwise intact. Cf. *B.M.M.A.* xxxiii, 1938, pp. 225 ff., figs. 1-4. The composite photographs of fig. 5 were prepared by Lindsley F. Hall.

³ No. 2628; Heydemann, "Humoristische Vasenbilder" in 30^{tes} *Berliner Winckelmannsprogramm* 1870, pl. I, 3; associated with the Sotades Painter by Beazley, *Greek Vases in Poland*, p. 27, note 3 as "probably his work." The drawing is so thoroughly Sotadean that I think it must be by him.



FIG. 4.—CUP IN THE FORM OF A COW'S HOOF. THE METROPOLITAN MUSEUM OF ART

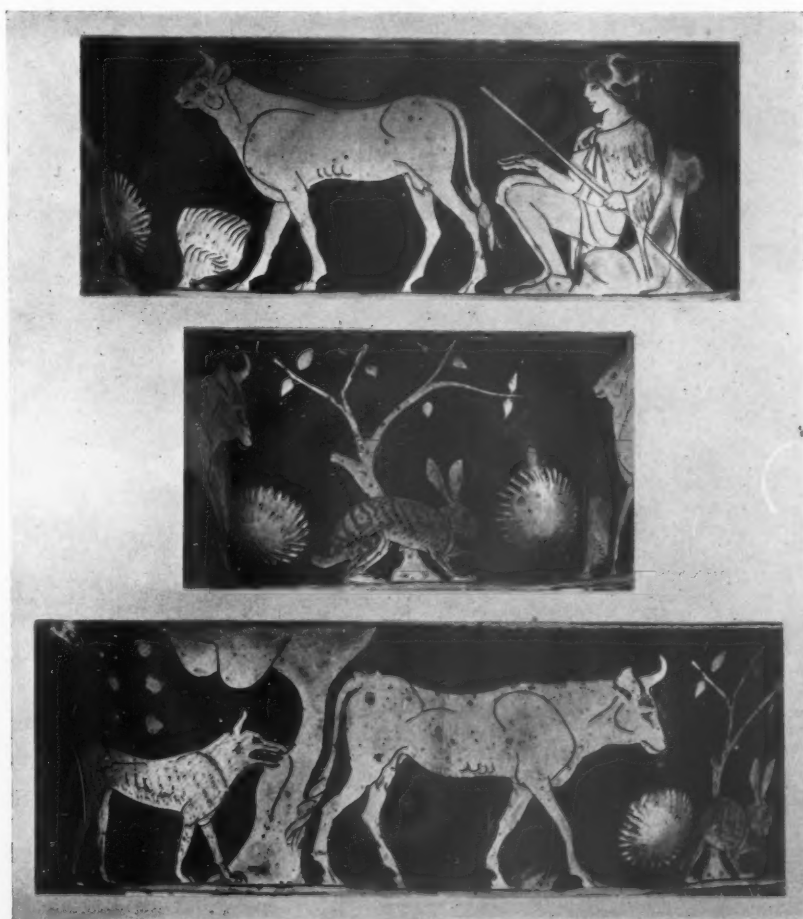
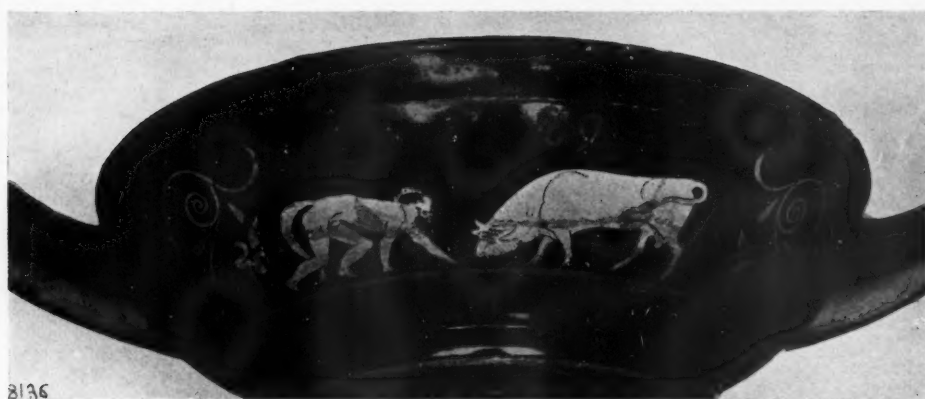


FIG. 5.—SCENE ON THE CUP SHOWN IN FIG. 4



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FIG. 6. — SCENE ON A CUP IN THE NATIONAL MUSEUM, NAPLES



FIG. 7. — CUP IN THE FORM OF A HORSE'S HOOF. NATIONAL MUSEUM, NAPLES

The only other Attic cup known in the form of a hoof is in the National Museum in Naples ¹ (fig. 7). It is a horse's hoof and there is no figured scene on it.

GISELA M. A. RICHTER

METROPOLITAN MUSEUM
OF ART, NEW YORK

¹ Heydemann, *Vasensammlung des Museo Nazionale zu Neapel*, p. 649, no. 50. I owe my knowledge of this vase to J. D. Beazley. The photographs shown in figs. 6, 7 were kindly sent me by Olga Elia and I am greatly indebted to A. Maiuri for his generous permission to publish them.

THE ORIENT AND EUROPE

IN 1899 Oscar Montelius formulated what has remained a normative principle to prehistorians in Western Europe. In *Der Orient und Europa* he wrote: "At a time when the peoples of Europe were so to speak without any civilisation whatsoever, the Orient and particularly the Euphrates region and the Nile valley were already in enjoyment of a flourishing culture. The civilisation which gradually dawned on our Continent was for long only a pale reflexion of Oriental culture." These sentences, owing to the state of archaeology at the time, embodied rather an hypothesis than a conclusion and rested upon other undemonstrable assumptions. The latter may be resolved into the following five propositions, treated as axioms: (1) Civilisation in the Orient is extremely ancient; (2) Civilisation can be diffused; (3) Elements of civilisation were in fact diffused from the Orient to Europe; (4) The diffusion of historically dated Oriental types provides a basis for bringing prehistoric Europe within the framework of historical chronology; (5) Prehistoric European cultures are poorer than contemporary Oriental cultures, i.e., civilisation is later in Europe than in the East. In 1899 Montelius' five assumptions could be masked by a statement that was really an affirmation of faith, rather than a deduction from accumulated data. When our spiritual ancestors turned for light to the ancient east, they gazed on an uncharted plain, its limitless horizon broken only by the Oriental mirage or the dust-clad ruins of pyramids and ziggurats. The palace of Minos was still a hill round which olives grew, and Sargon of Agade reigned placidly in the empty firmament of the IVth millennium. Today the dust stirred up by excavating spades settles to leave a landscape no longer uncharted. Beneath the ziggurats and behind the pyramids we can descry Halafian villages and Badarian cemeteries. Sargon has been dragged from his remote pinnacle and set among mortal men a thousand years later. Exploration has left no *terra incognita* wherein to picture the sun recuperating when forest obscured his light in the Dordogne.

Moreover botanists and geologists are advancing independent chronologies for prehistoric Europe. Their conclusions appear to diverge from those derived by applying Montelius' 4th axiom. The gap between the geological and historico-archaeological record is widening. It will take a lot of microliths to fill the hiatus between the Old Stone Age and the New. Finally ethnographers like Graebner and Schmidt have formulated criteria for testing the likelihood of diffusion in any special case — the number of traits common to the suspected regions and the continuity of their distribution. And Randall-MacIver reminded the British Association at York of how we may rigorously prove intercourse, which gives at least opportunity for the diffusion of ideas, by detecting artificial changes in the natural distribution of rocks, ores, shells and similar substances. Archaeological theories have been experimentally tested by excavation. Enough is known of Mesopotamia and Egypt to compare Montelius' first axiom with the data of experiment. Excavations in Asia Minor, Anatolia and the Balkans provide opportunity for applying the continuity criterion to Oriental-European relations. Petrographical and zoölogical examinations are

available to demonstrate intercourse on Randall-MacIver's test. The orientalist position can no longer be left as an undemonstrable working hypothesis, but must be tested in the light of the concrete data now accumulated. Let me first summarise the results of excavations in Hither Asia that tend to establish the first axiom—the antiquity of Oriental culture. The beginning of the historical or Dynastic period in Egypt and Sumer now constitutes a fairly accurately dated horizon. The coincidence of Egyptian and Mesopotamian sources is now close enough to permit of this horizon being dated with general consent about 3100 \pm 100 B.C. The latest additions to knowledge resulting from Frankfort's masterly operations at Tell Agrab, Tell Asmer and Khafaje, have not only to be mentioned as enhancing the likelihood of diffusion and providing fresh data for European chronology, but intensify our appreciation of the high level of Oriental civilisation and emphasise the long duration of the Early Dynastic Age. The Sin Temple at Khafaje was rebuilt five times. In the same period the Temple of Abu at Tell Asmer underwent four reconstructions.¹

And the Early Dynastic period itself was far from the beginning of urban life. In the Tigris-Euphrates delta it is preceded by two periods termed respectively the Jemdet Nasr and Uruk phases, during which monumental buildings were already being erected.² At Erech below the earliest dynastic temple ruins the German excavators uncovered the wall stumps of a gigantic edifice that had been reconstructed once or twice in the Jemdet Nasr period. These walls in turn rested on ruins of a no less imposing building, the Red Temple: a veritable cathedral adorned with a mosaic of clay nails and with friezes of stucco beasts. The Red Temple itself was twice remodelled and was after all only the successor of a still earlier, but no less monumental, cathedral, termed in view of its unusual stone foundations, the Limestone Temple. Now you do not build a cathedral every fifty years, even if it be built only of mud brick. This series of three prehistoric temples with their several reconstructions must cover a period of several centuries. (Incidentally writing was invented during that period.)

But even in the Limestone Temple we are dealing with a highly-organised urban civilisation presupposing centuries of experimentation and development. Some aspects of that development are explicitly revealed in the archaeological record. From the floor level of the Limestone Temple the Germans sank a shaft, 17 m. or just under 60 ft. deep to virgin soil. It was dug entirely through the débris of prehistoric dwellings. As one winds down the ramp into that dizzy abyss one can distinguish in the pit wall 18 layers marked by hearths, floors, stumps of walls and heaps of sherds and artifacts. As Dr. Randall-MacIver has insisted, nothing could be more perilous than an attempt to estimate in years the time taken for such an accumulation to form. But I must confess that nothing has driven home so vividly the antiquity of settled life in the Tigris-Euphrates delta as the descent of that great shaft. Admitting that I am now guessing perhaps rashly, I cannot believe that the al'Ubaid culture represented in the lower levels at Erech is later than 4500 B.C.

¹ H. Frankfort, "Progress of the Work of the Oriental Institute in Iraq, 1934-1935," *OIC.* 20, 1936, pp. 35-73.

² Childe, *New Light on the Most Ancient East*, London, 1936, pp. 134-167; Nöldeke, Heinrich, Jordan, etc., "Vorläufige Bericht über die in Uruk unternommenen Ausgrabungen," IV and VI, *Abhandlungen der preuss. Akad. der Wissen., phil.-hist. Klasse* 1932, pp. 6 ff.; 1935, pp. 2 ff.

But no one has ever suggested that the geologically very recent delta of Lower Mesopotamia was the cradle of food-production. It is in fact evident that the al'Ubaid farmers who settled on the freshly emerged land-surface there brought with them from older regions a culture already mature. And in the last five years the excavations of Mallowan and Speiser in Assyria and Syria have given us glimpses of what preceded al'Ubaid in the Fertile Crescent. It is true that history does not fully dawn there till relatively late—till the time of the Dynasty of Akkad indeed. But relations with Lower Mesopotamia were so close and so continuous that the archaeological record provided by the various levels of Gawra, Nineveh and Chagar Bazar can be proved parallel to that of Sumer. "The longest continuous record of superimposed occupations known to science" is preserved at Tepe Gawra.¹ The truly gigantic accumulation of settlement débris, totalling 102 ft. in height, has been divided into twenty-six main structural phases (numbered from the top downwards); these in general correspond to reconstructions of shrines that occupied the centre of the site. And the inhabitants of a country town like Gawra would hardly rebuild their temple more than once a century.

The latest occupation, Gawra I, belongs to the Hurrian period about 1700 B.C. Gawra VI is apparently already Early Dynastic. And chalice ware, imported from Assyria and found in an Early Dynastic I house at Tell Asmer² dates Gawra VI, to which that ware is proper, to 3000 B.C. at latest. Lower down come four or five architectural periods, the relics from which exhibit a general parallelism to the Jemdet Nasr and Uruk phases in Sumer. Hence, when we meet in Gawra XIII pottery, clay nails and other relics typical of the earliest or al'Ubaid phase of Sumer's prehistory we have no reason to assume that al'Ubaid in Assyria is appreciably later than in Lower Mesopotamia. But Gawra XIII³ already boasted a cluster of three handsome, indeed monumental, temples, decorated with painted buttresses and recesses and grouped round a court 20 m. by 14 m. in area.

And these al'Ubaid temples are already perched upon a tell raised by the ruins of older settlements more than 50 ft. above virgin soil. Below the al'Ubaid levels come others containing first pottery of Samarra type, then that typical of the Halafian culture, which is found pure in Gawra XX and down to XXV.⁴ Mallowan found the same culture beneath, and therefore older, than al'Ubaid remains at Arpachiya⁵ and in deep levels at Chagar Bazar⁶ on the Khabur (Syria). The Halafian culture is accordingly older than al'Ubaid and, guessing once more, might well begin before 5000 B.C. But it is no less sophisticated. At Arpachiya monumental circular buildings, cobbled streets, delicate and beautifully painted vases, ingeniously carved stone beads and stamps used for sealing property attest already a well organised society, an advanced economy, highly developed craftsmanship. If the collection of pit-dwellings and wattle-and-daub huts sheltering under the gigantic ramparts of

¹ E. Speiser, *Excavations at Tepe Gawra*, Philadelphia, 1935, supplemented by "Closing the Gap at Tepe Gawra," *Asia* xxxviii, 1938, pp. 536-543.

² Frankfort, "Oriental Institute Discoveries in Iraq, 1933-34," *OIC* 19, 1935, p. 21; the amulet and stone statuette, *ibid.*, fig. 24, have exact parallels in Gawra VI (Speiser, *Tepe Gawra*, pls. LIII-LIV) and so again confirm Speiser's datings.

³ *BASOR* 66, 1937.

⁴ E. Speiser, *Asia*, l.c.

⁵ Mallowan, "Excavations at Arpachiya in Assyria," *Iraq* ii, 1935, pp. 1 ff.

⁶ Mallowan, "The Excavations at Tall Chagar Bazar," *Iraq* iii, 1936, pp. 10 ff.

Maiden Castle be termed a city, can we deny that name to the Halafian settlement at Arpachiya? Its cobbled streets disclose a community as well organised for works of public utility as were Iron Age Britons for defence preparations. Even the economic aspect of city life is represented. The richest house at Arpachiya would seem to have belonged to an artist-craftsman presumably producing for sale, not merely for the satisfaction of domestic needs. And even long distance trade is dramatically attested by a shell of *Cypraea vitellus* imported from the Persian Gulf to the Halafian village at Chagar Bazar on the Khabur.

The Halafian culture must have flourished for several generations. Mallowan uncovered at least five building levels at Arpachiya and seven at Chagar Bazar. And yet at Gawra, Nineveh and Chagar Bazar, the oldest Halafian foundations rest upon the ruins of villages characterised by painted pottery. Frankly guessing once more, these might take us well back into the sixth millennium B.C.

Yet the culture revealed even in these remote depths resembles the European neolithic only in the most formal sense—in the continued use of polished stone adzes and some other tools. The earliest cultures of the Fertile Crescent, like its Early Dynastic cities, are so unlike anything we know in Cis-alpine Europe before Roman times, are economically so far ahead of Köln-Lindenthal or Skara Brae or even Tószeg as to seem almost incommensurable. Yet some comparison is inevitable if Montelius' fifth postulate is to be objectively criticised.

The abruptness of the contrast may today be softened by reference to a region that is more than spatially intermediate between Mesopotamia and Europe—Anatolia. The results of the long campaign conducted at Alişar Hüyük by the Oriental Institute of Chicago have given the first definite clue to the culture-sequence on the plateau. In particular they provide the skeleton of a chronology. Recorded history began relatively late in the Halys basin; continuous records, disclosing names and dates, do not go back beyond the foundation of the First Hittite Empire in the twentieth century B.C. But intercourse between Anatolia and Mesopotamia is attested by business documents several centuries earlier and by tradition as far back as the reign of Sargon of Agade. It is faithfully reflected in the archaeological record.

Below the Hittite foundations on the acropolis at Alişar¹ (but not on the terrace) came a deposit with Cappadocian painted ware now termed Early Bronze Age or Alişar C. Below that, five building layers, accounting for 11 m. of deposit, represent the Copper Age or Alişar B. This must end by 2000 B.C. A beginning towards 3000 B.C. might be inferred from an imported Mesopotamian cylinder of Jemdet Nasr style, stone figurines like those regarded as Anatolian intruders in the Early Dynastic layers of Gawra and Tell Asmer,² and animal pendants of stone remarkably like those from the Early Dynastic temple of Sin at Khafaje.³ To this same Copper Age belong the ruins and burials at Ahlatlibel near Ankara.⁴ It was a period when commerce was sufficiently organised for metal to be common and seals to be useful.

But beneath the lowest Copper Age floors von der Osten's shaft pierced 8.5 m. of

¹ H. H. von der Osten, *The Alişar Hüyük, 1930-32* (Oriental Institute Publications xxix), Chicago, 1937 (hereafter OIP.).

² OIP. xxix, fig. 183 and OIC. 19, figs. 24, 28.

³ OIP. xxix, fig. 184 and OIC. 19, fig. 61.

⁴ Hamit Koşay, "Ahlatlibel Hafriyatı," *Türk Tarih Arkeologya ve Etnografya Dergisi* ii, 1934, pp. 1 ff.; AOF. xi, 1936, pp. 46 f.

débris, divisible into seven building levels, before reaching virgin soil. The earliest Anatolian culture, represented by Alişar A, is already so advanced that it is accurately termed Chalcolithic. However sparingly used, copper, silver and lead were common enough to indicate well established commercial channels of distribution and specialised producers. Stamp-seals were already employed. But certain pot-forms and fabrics already comparable to the Central European two-handled tankards, like those of the Hungarian Copper Age, occur in the topmost layers only (Alişar A2); for the rest lugs take the place of handles, but a distinctive shape is a high-pedestalled bowl, at first with a remarkably Danubian profile. The fabric is self-coloured, black to red but generally muddy and sometimes parti-coloured—black inside and round the rim, but brownish below on the exterior. The Anatolian Chalcolithic seems rooted in the fourth millennium B.C., but how far back remains quite uncertain.

Despite conspicuous divergencies the Copper Age and Chalcolithic cultures of Central Anatolia are patently related to, and continuous with those of north-western Anatolia, long known from Schliemann's excavations at Troy. And there re-excavation under Blegen has substantially enhanced the impression of the antiquity of Anatolian culture. If the Americans have not yet provided unimpeachable data for determining the absolute age of the earlier "cities," they have at least filled in and expanded the scheme propounded by Schliemann and Dörpfeld. The Troy that the Achaeans might have sacked about 1200 B.C., did Lord Raglan allow us to believe in a Trojan War, was not VI but VIIa. Troy VI goes back on the strength of Helladic imports to 1500 B.C.¹ Cities V, IV and III turn out to be quite important settlements, divisible into several architectural levels and making up together a formidable accumulation 4 m. deep. Troy II, thus separated from the Mycenaean horizon, can no longer be brought down to the Shaft Grave epoch, however neat Åberg's typological comparisons may look.² It is firmly anchored in the third millennium, whatever its precise limits may be. And Troy I below it was already a city girt by an imposing wall. Its citizens were executing monumental sculptures that provide a new limiting date, on Montelius' assumption, for the statue-menhirs of Atlantic Europe.³ And by this time, as Miss Lamb⁴ has shown at the contemporary Lesbian township of Thermi, copper and even bronze were already being worked, celts might have hammered flanges (fig. 1), battle-axes were used in war, while trade brought marble vases from the Aegean Islands. And remains of a still earlier phase of culture may be discerned at Kum Tepe. Soundings there produced pedestalled bowls like those from the earliest Chalcolithic of Alişar that seem still missing in Troy I and the contemporary Lesbian site.

The experiments in Anatolia thus go far to re-enforce with objective facts the antiquity and relatively high level of Oriental culture assumed in axiom 1. Moreover, taken in conjunction with Heurtley's excavations in Macedonia, they concretely demonstrate connections between Asia and Europe that are the precondition

¹ Dr. Blegen is reported as having put the beginning of Troy VI about 1900 B.C. (*Proc. Prehistoric Soc.*, Cambridge, 1938, p. 221).

² N. Åberg, *Bronzezeitliche und früheisenzeitliche Chronologie* iii, Stockholm, 1933, pp. 130 ff.

³ *AJA.* xli, 1937, pp. 561-575.

⁴ W. Lamb, *Excavations at Thermi in Lesbos*, Cambridge, 1936.

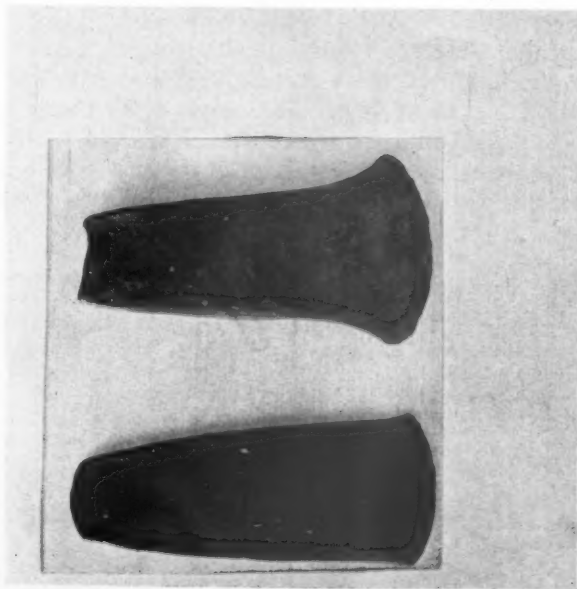


FIG. 1. — HAMMER-FLANGED AXE-HEADS FROM THERMI III AND IV-V IN LESBOS (5:8)
(Courtesy of Miss W. Lamb, F.S.A.)



FIG. 4. — CLAY STAMP, KÖRÖS SETTLEMENT AT HODMÉSZÖVÁSÁRHELY — KOTACSPART (2:3)
(Archaeological Institute of the University, Szeged)



FIG. 5. — DOUBLE-AXE-HEAD OF STONE FROM ARPACHIYA 1:1
(British Museum)

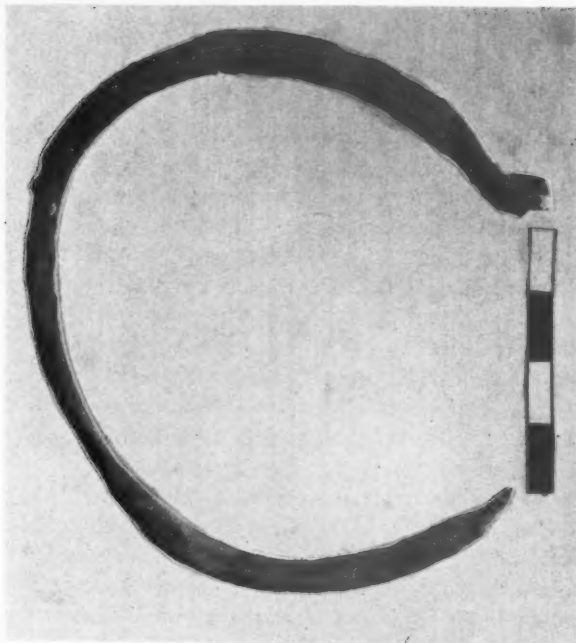


FIG. 2. — INGOT-TORQUE, TELL AGRAB, ORIENTAL INSTITUTE, CHICAGO

for admitting axiom 3 and provide a crucial instance for testing axiom 5, i.e. for comparing demonstrably contemporary cultures in Europe and Asia. Heurtley¹ has convincingly demonstrated the Anatolian ancestry of the Early Macedonian Bronze culture; it begins with fully developed horned tubular lugs growing from the bowls' rims. The evolution of this odd type that appears fully formed in Europe can be traced stratigraphically on the Asiatic side. It emerges as a finished product first in phase B at Thermi; its earlier stages are illustrated in phase A. For once we have, fully documented, a cultural spread which is irreversible; in this concrete instance axiom 3 becomes a conclusion from ascertained facts.

But, implanted in Europe, Anatolian culture appears poorer than its Asiatic parents. Even in phase A Thermi was quite a township, the contemporary Troy I a fenced city. Their economy was so far advanced that copper and even bronze could be used for tools as well as weapons; metal was so plentiful that quite a lot was left lying about for Miss Lamb to find. The Early Macedonian settlements which are not older than Troy I give the impression of rustic villages. For all the metal collected among their ruins, they might be neolithic. Macedonia was still veiled in mists which the Oriental sun must pierce before an economic system comparable even to the Anatolian could function.

But if the Early Bronze Age culture of Macedonia is unambiguously rooted in Asia, the later neolithic culture which it supersedes is no less securely linked with that of Vinča and Tordos in the Middle Danube basin beyond the Balkan ranges. Comparison of the Macedonian relics with those from the Morava-Middle Danube-Maros sites shows that we are dealing, not with two cultures, but with different facies of one and the same culture. Common to both regions are stone adzes of shoe-last form, bone combs,² bracelets of *Spondylus* shell, clay figurines, clay altars, carinated bowls and chalices on solid pedestals in dark-faced, parti-coloured and red-slipped wares decorated by incision, fluting, stripe-burnishing and painting in black or white on red³ sometimes with spiral motives and embellished with lugs modelled as animal heads. A veritable cultural continuum traversing the Balkans⁴ connects the Aegean coasts with the Danube basin. We may reasonably speak of a Vardar-Morava culture extending from the coasts to the Maros.

How such a continuum was constituted remains a question for debate elsewhere. Its absolute antiquity in Macedonia cannot be defined with precision owing to the difficulties of applying the Minoan-Helladic systems to what may have been a cultural backwater and the uncertainties in the systems themselves. Even the position of the Vardar-Morava culture in the Danubian sequence remains ambiguous. Though the deposit at Vinča is 10 m. thick and comprises type fossils of Danubian

¹ W. A. Heurtley, *Prehistoric Macedonia*, Cambridge, 1939 (especially p. 118).

² Cf. Heurtley, *op. cit.*, fig. 35 and Nestor, "Der Stand der Vorgeschichtsforschung in Rumänien," *Bericht der römisch-germanischen Kommission des archäologischen Instituts des deutschen Reichs* 22, 1933, p. 36 (hereafter BRGK.).

³ Heurtley, *op. cit.*, p. 116; cf. Mylonas, *Excavations at Olynthus, I* (Johns Hopkins University Studies in Archaeology, 6), p. 48 f. and for the Danube valley, Fewkes, etc. "Excavations at Starčevo" *Bulletin, American Schools of Prehistoric Research* 9, pp. 17 ff. (hereafter BASPR.).

⁴ Most ceramic classes are found all down the Morava from Pavlovče, 55 miles south of Niš to the Danube; Fewkes, "Neolithic Sites in the Moravo-Danubian Area," *BASPR.* 12, 1936, esp. pp. 28-39, 50, 56.

II, the methods of excavation and publication¹ do not permit of the distribution of the relics between stratigraphically defined periods. For our purpose the supreme importance of the Vardar-Morava complex is that it establishes at least once a continuity of culture from the Aegean to the Danube basin. Whatever be the chronological horizon of that continuity, its existence enhances enormously the significance of the southeastern analogies to cultural phenomena in Central Europe. It provides a justification for admitting axiom 3—diffusion from Asia to Central Europe is likely.

Fortified by this conclusion let us turn to axiom 4—the prehistoric chronology of Central Europe. There the cultural sequence is reasonably clear at least north of the Bakony and the Little Carpathians. The divisions which I tentatively suggested ten² years ago have on the whole been fully justified by recent research. A reference to the comprehensive survey of the Danubian and Western Cultures in Germany published by Buttler³ last year will show how well my scheme works. Thanks particularly to the work of Banner round Szeged it can even be extended to the Hungarian plain more fully than I could do. The Copper Age Bodrogkeresztur culture⁴ there is plainly the counterpart of the so-called Nordic and Bell-beaker cultures of my Danubian III in the Sudeten lands, and Banner's Körös⁵ culture may well fill up my period I. But to what Oriental cultures shall these several phases be compared? Encouraged by the newly-revealed proofs of intercourse, let us apply Montelius' fourth axiom to dating the Danubian sequence.

The earliest bronze objects⁶ found in Central Europe (in graves and hoards of the Aunjetitz culture) include a whole constellation of specialised and arbitrary forms of ornament that are now known also in historically dated horizons. Ingot-torques have been found in Early Dynastic levels at Tell Agrab (p. 15, fig. 2) and recur in North Syria⁷ and in the Copper Age graves of Ahlatlibel in Turkey. Earrings and lock-rings⁸ with flattened ends are common in Early Dynastic Sumerian graves and in the "treasures" of Troy II; racquet pins are found in the Royal Tombs of Ur,⁹ the knot-headed pin goes back to Gerzean times in Egypt¹⁰ and appears at Troy II; its principle was applied to Sumerian toilet-sets in Early Dynastic times. By then tin bronze was already known to the Sumerians as to the Lesbians in the time of Thermi I. In a word all the type-fossils of the Early Bronze Age in Central Europe and the technical discovery that defines the period, can be traced back to somewhere about 3000 B.C. in the Orient. On the strictest application of Montelius' axiom the beginnings of the Continental Bronze Age should be nearer 2800 B.C. than 1800!

And as far as Central Europe is concerned, that chronology would involve no glaring contradiction. Oriental parallels can be found to the types that define earlier

¹ M.M. Vassits, *Preistorijska Vinča*, Beograd, 1932–1936, 4 vols. (in Serbian); cf. Fewkes' criticisms, *BASPR.* 12, 1936, pp. 20–25.

² Childe, *The Danube in Prehistory*, Oxford, 1929.

³ W. Buttler, *Der donauländische und westliche Kulturkreis der jüngeren Steinzeit* (Handbuch der Urgeschichte Deutschlands, 2), Berlin, 1938.

⁴ Tompa, "25 Jahre Urgeschichtsforschung in Ungarn," *BRGK.* 24–25, pp. 52 ff.

⁵ Banner, in *Dolgozatok a m. kir. Ferencc-József-tudományegyetem archaeologiai intézetéből* (hereafter *Dolgozatok*) viii, 1932, pp. 32–48; ix–x, p. 122; Tompa, *BRGK.* 24–25, p. 46.

⁶ Enumerated in Childe, *Danube*, pp. 229–30, pls. IX and XIV.

⁷ Syria vi, 1925, p. 16; cf. note 1, p. 23.

⁸ Childe, *New Light*, p. 193, fig. 72 and pl. XIX, b.

⁹ Childe, *op. cit.*, fig. 71.

¹⁰ Brunton, *Badarian Civilization*, London, 1928, pl. LIV, 9; cf. also Bittel, "Einige Bemerkungen zu trojanischen Funde," *Marburger Studien*, Darmstadt, 1938, p. 14.

periods, while Mediterranean shells, imported even to the Rhine Valley, prove intercourse with the southeast right back to Danubian I. Stone battle-axes such as characterise period III are found already at Thermi I. The Early Dynastic levels of Tell Agrab (fig. 3) have yielded rather degenerate specimens; better battle-axes come from the al'Ubaid settlement at Arpachiya,¹ and from Gawra VIII-IX,² that is equivalent to Uruk in Sumer. Hence Danubian III could be equated with the Uruk period.

Clay stamps, generally called pintaderas, appear in Danubian II (p. 15, fig. 4)³ and in Körös sites that may be older. In form they closely resemble Asiatic stamp seals of stone and, like the latter, at first bear a filled cross design. In Europe such stamps, nowhere very numerous, are common only in the extreme southeast — Bulgaria, Wallachia, Transylvania, the Middle Danube plain; stray examples reach Moravia; still fewer the Upper Elbe and Oder basins. Such a distribution justifies their interpretation as copies of Asiatic stone seals. But in Asia prototypes can be found as early as Halafian times and in the Chalcolithic layers of Alişar. And there there are pedestalled

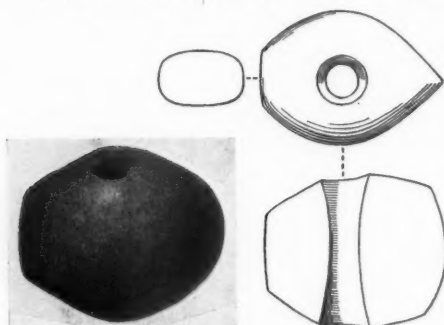


FIG. 3.—STONE BATTLE-AXE FROM TELL AGRAB (1:2)

(By Permission of the Oriental Institute of the University of Chicago)

bowls remarkably like those characteristic of Danubian II. The upper limits for that period could accordingly be pushed back to Alişar Chalcolithic or even Tell Halaf.

And that is not the end of our comparisons. As *Spondylus* shells were being imported from the Mediterranean even in Danubian I times, so some Danubian I vases are decorated with patterns in which Neustupny⁴ rightly sees a representation of a double-axe. For the models he looked to Minoan Crete. But double-axes were used in Assyria as amulets even in Halafian times (p. 15, fig. 5).⁵ So the *terminus post quem* provided by that motive can be relegated to a remote Tell Halaf period. Danubian I, admittedly the oldest neolithic culture discernible in Continental Europe, can be compared with Tell Halaf.

Testing this long chronology in the other direction, it can still be made to work. Åberg⁶ and Reinecke⁷ have indeed insisted on Middle Helladic and Shaft Grave parallels to Aunjetitz bronzes of period IV. But on the whole, Middle Aegean armament — rapiers, ogival daggers, socketed spear-heads — is typologically parallel rather to that proper to the Middle Bronze Age or period V, in Central Europe. A halberd from Shaft Grave IV is admittedly of an Early Bronze Age type, but Forssander⁸ has

¹ Iraq ii, 1935, pl. X, h.

² Speiser, *Tepe Gawra*, pl. XL, b.

³ Childe, *Danube*, pp. 80, 88, 93; *Dolgozatok* ix-x, 1933-34, pl. XVII, 5.

⁴ "Beitrag zur Chronologie des mitteleuropäischen Neolithikums," *IPEK* xi, 1936-37, pp. 16-27.

⁵ Iraq ii, fig. 51, 5.

⁶ Åberg, *Chronologie* iii, pp. 136 ff.

⁷ *Germania* xvii, 1933, p. 12.

⁸ *Der ostskandinavische Norden während der ältesten Metallzeit Europas*, Lund, 1936, p. 233; cf. Evans, *Palace of Minos* ii, p. 173.

plausibly compared its contours with those of a Middle Bronze Age sword from Hajdu Samsón. The pottery from Middle Age Bronze graves at Vattina and from southeastern Hungary (fig. 6) includes many tankards and goblets with crinkled rims and grooved handles that might be copies of well known Middle Minoan silver vessels.¹ In a word, a limiting date about 1700 B.C. for the Middle Bronze Age is defensible.

And with the fall of the Mycenaean culture we have admittedly reached the Late Bronze Age or period VI of Central Europe. The barbarian invaders who sacked Late Mycenaean Vardaroftsa, in the twelfth or eleventh century, brought ceramic traditions proper to the Late Bronze Age urnfields like Knoviz and Hötting.² And this date is for once a *terminus ante quem* for the continental period. An even higher limit might be deduced from the fibulae and flange-tanged swords that appear in Greece during the thirteenth century. Accordingly the following scheme of European chronology might be defended:

Mesopotamia	Anatolia	Greece and Macedonia	Connecting traits	Danubian period	Date B.C.
	Troy VIIb	Sack of Vardino	Swords, fibulae, urnfield wares	VI	1200
Kassites	Troy VIIa VI V	L.H. Shaft graves M.H.	Rapiers, ogival daggers, spear-heads, Vattina ware.	V	1400 1600 1800
Hammurabi Early Dynastic	Troy II Alışar B	E.H. Early Macedonian	Ingot-torques, knot, racquet & scroll-head pins, lock-rings	IV	2000 2800
Jemdet Nasr Uruk	Troy Ia Alışar A2	Neolithic II	Battle-axes	III	23500
al'Ubaid	?Kum Tepe Alışar A1	Neolithic ?I	"Pintaderas," pedestalled bowls	II	?4200
Tell Halaf	?	?	<i>Spondylus</i> shell, double-axe motive	I	5000
"Neolithic"	?	?	None	Mesolithic	

TABLE I

If geologists and botanists can show good grounds for demanding an enlargement and prolongation backward of the neolithic age, archaeological chronology can be adjusted to meet theirs without violating Montelius' axioms. Danubian I, admittedly the earliest neolithic culture in continental Europe, would still be limited by Tell Halaf. If the former have to be dated to the sixth millennium, the latter can just as reasonably be assigned a like antiquity.

The foregoing dates are advanced only as extreme possibilities. How would

¹ Cf. Evans, *op. cit.* i, fig. 139, a, with *Dolgozatok* vii, 1931, pl. IV, 15 and Childe, *Danube*, fig. 217 (dated too late).

² Childe, *Danube*, pp. 261, 336.



FIG. 6. —POTTERY OF VATTINA STYLE, SZÖREG
(City Museum, Szeged)

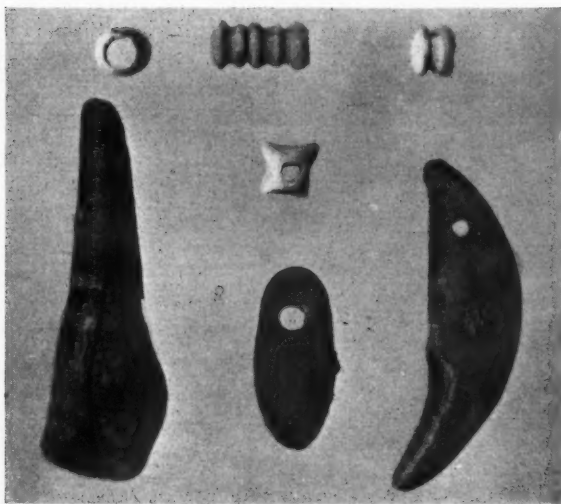


FIG. 8. —FAIENCE BEADS AND BORED TEETH FROM GRAVE
1929/3 AT ÓSZENTIVÁN (1:1)



FIG. 9. —POTTERY OF PERJAMOS TYPE FROM GRAVE 1929/3 AT ÓSZENTIVÁN
(Archaeological Institute of the University, Szeged)

Montelius' general view of the relations between Europe and the Orient be affected by adopting the long chronology outlined here? What happens to his fifth axiom if the Central European Bronze Age began about 2800 B.C.?

By that date we should have the following picture of the tract we have been surveying. We should see in Egypt and Lower Mesopotamia populous cities, covering like Erech perhaps two square miles of area, governed by a well established organisation, emancipated from immediate dependence on environmental conditions by extensive public works, a rich technical equipment and regular extensive commerce and all fully literate. Then in Assyria and Syria come smaller cities, only slightly less richly equipped and still at least semi-literate. Further afield in Anatolia and peninsular Greece are fortified townships whose walls protect a variety of specialised craftsmen so well served by regular commerce that metal could be freely used at least for tools; their citizens may already need and use seals, but seem to be illiterate. Next, in the Balkans and on the Hungarian plain, we find rustic townships occupied principally by farmers. Their rural economy is advanced enough to support a truly sedentary population, but virtually the sole outlet in industry for the surplus is offered by metallurgical employments, and trade is so imperfectly organised that metal has to be reserved mainly for armaments. The same picture would apply to Bohemia and southern Germany with the important reservation that agriculture seems not to have advanced so far as to allow the population to be really stable. Denmark and southern Sweden are still frankly in the Stone Age.¹ And still further north food-gathering is the sole economy.

Look back as many thousand years as may be necessary to reach Danubian I times, which have been for this purpose equated with the Tell Halaf period in the Fertile Crescent. In the Orient we see already little townships permanently occupied by experienced farmers, comprising already expert craftsmen and supplied by trade at least with obsidian. In Crete and Thessaly, too, perhaps, more self-sufficient farmers are still applying sufficient science to their fields to be able to live permanently on the same site. But beyond the Balkans nomadism reigns. The Körös herdsmen are roaming over the Alföld, tilling and grazing patches for a few seasons and then moving on. And Danubian I peasants are spreading over the löss, shifting their little hamlets of twenty or so households to new virgin fields every few years. And beyond the frontiers of the löss are only food-gatherers, fishing and fowling along streams in the forest or collecting shell-fish on the coasts.

Yet earlier still beneath Halafian villages we have glimpses of settled cultivators who, to judge by the few items of equipment so far recovered, were at least as far advanced as the Danubians.

Even on this extreme chronology Montelius' fifth axiom is justified. Oriental cultures are richer than the contemporary European. Moreover the first picture discloses a very significant cultural zoning. As we pass northwestward from the Orient we descend through regular gradations from the many-sided richness of urban civil-

¹ For synchronization of later neolithic in North with Early Bronze Age in Central Europe see Childe, "Antiquity of the British Bronze Age," *Amer. Anthr.* xxxix, 1937, p. 12, K. Kersten, *Zur älteren nordischen Bronzezeit*, Neumünster, p. 101 and E. J. Forssander, *Der ostskandinavische Norden während der älteren Bronzezeit*, Lund, 1937, p. 163.

isation to the stark poverty and immediate dependence on external nature of food-gathering hordes. Such a grading is exactly what would be deduced from Montelius' third axiom. Its discovery in the archaeological record is the best demonstration of diffusion that I can imagine. I take it as confirming the diffusion of bronze-working with all its economic implications.

But on the extreme chronology this demonstration could not be applied to food-production, to the more important discovery-complex that made possible what I term the neolithic revolution. The Vardar-Morava culture, that as yet alone establishes concretely continuity across the Balkans, could hardly be put so early in relation to Oriental cultures, however it may be related chronologically to Danubian I. Objective proof of cultural continuity, giving effective opportunity for diffusion between the Near East and Central Europe, would be still lacking. The belief that agriculture and stock-breeding, the foundations of any neolithic culture, were introduced into Europe from the Orient would remain only a probable hypothesis which, however much its plausibility has been enhanced, must await final confirmation or refutation in the observed facts of excavation. The Balkans are still but little known. Till the crucial experiments have been made there, it would be permissible to hope for confirmatory evidence in that quarter.

Montelius' thesis has come unscathed through the severest test. Even on a chronology based on geological rather than archaeological premises and designed to meet the demands of an extraneous discipline, his axioms 4 and 5 prove workable. If geologists demand dates of the order just outlined, archaeologists can meet them without sacrificing any essential principles, but preserving intact their own proper methods and all the historically vital deductions therefrom. But these high dates for Central European prehistory have been advanced provisionally simply and solely to test the applicability of Montelius' method, and not as proven or even probable. To justify them archaeologically we have had to sacrifice many tempting comparisons and to explain away observed facts that must be admitted as relevant.

Remember that down to 1200 B.C. no date in European prehistory could be justified archaeologically by an actual object of Oriental manufacture found in Central Europe, still less by an admittedly European product in a historically dated context. We have had to rely exclusively on copies of Oriental models made in Central Europe. Remember further that all the types on which we have relied enjoyed a long popularity in the Orient: seals that could serve as models for Danubian II "pintaderas" were current in Crete and Asia Minor throughout the third millennium and later. Battle-axes for comparison with those of Danubian III were brandished equally long in central Anatolia and first appear in peninsular Greece in Middle Helladic times.¹ The type fossils of Period IV only came into fashion in the East in the third millennium, and fashions did not change abruptly. Knot-headed pins in Cyprus and North Syria are all dated between 1900 and 1500 B.C.² and were still being worn in the third (Hittite) settlement at Kusura (fig. 7)³ during the second millennium.

¹ Goldman, *Excavations at Eutresis*, Cambridge, 1931, p. 206.

² Bittel in *Marburger Studien*, pp. 13-16.

³ Lamb, "Excavations at Kusura near Afyon Karahisar," *Archaeologia* lxxxvi, 1936, p. 40, fig. 18, 18.

Ingot-torques in Syria belong to the first three centuries of the second millennium¹ and they, together with racquet pins, lock-rings and earrings with flattened ends are common in Caucasian graves² well after 1500 B.C. The archaeological "synchronisms" so far considered are really just upper limits.

Accordingly till geologists present their demands with more unanimity and confidence, it is permissible to recall other comparisons between Central European and southeastern phenomena that entail substantially lower dates for our prehistoric periods. Characteristic of Danubian II are cubical blocks of clay, with one or rarely two cups hollowed out in them and perforated at the corners.³ These have been convincingly explained as clay copies of Early Minoan block vases of stone. Thus interpreted, they would bring the limits of Danubian II down into the third millennium under axiom 4.

Found allegedly in an Aunjetitz grave of period IV at Nienhagen⁴ in Central Germany was a clay cup; its curious handle is strikingly like those of the metal Vapheio cups of Late Minoan I, most popular between 1600 and 1500 B.C. Parallels between Aunjetitz weapons and those of the Mycenaean Shaft Graves of roughly similar age have already been mentioned – and explained away. Still the amber beads from these and later Mycenaean graves should re-enforce the arguments for a parallelism between Central European Aunjetitz and Late Helladic Greece. The amber trade was a mainspring of the Aunjetitz commercial system. Did it involve nothing more than barter between barbarians in Denmark, Bohemia and Upper Italy? The brilliance of the Early Bronze Age in Bohemia would become much more intelligible if that region were already connected by the amber trade with civilised Greece. The probability of such a connection is enhanced by Piggott's⁵ recognition among the amber beads from Kakovatos (Nestor's Pylos) of massive beads and space-plates in the Danish style, such as occur also in Aunjetitz graves. All these pointers converge upon a date for the beginning of the Central European Bronze Age a full thousand years later than the upper limits deduced from the metal ornaments.

Such considerations are, however, frankly speculative and can if needful be dismissed. It is less easy to explain away certain actual Aegean or Egyptian imports found in an apparently Early Bronze Age context in Central Europe. Segmented faience beads (p. 20, fig. 8) occur in five graves near Szeged⁶ associated with pottery

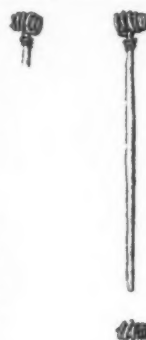


FIG. 7. — KNOT-HEADED PIN FROM KUSURA C (Courtesy of Miss W. Lamb, F.S.A.)

¹ Bittel, *Germania* xvii, 1933, pp. 91 ff.; *Marburger Studien*, p. 19.

² Chantre, *Recherches anthropologiques dans le Caucase*.

³ Childe, *Danube*, p. 77; Schranil, *Die Vorgeschichte Böhmens und Mährens*, Berlin, 1927, pl. VII, 2.

⁴ Ebert, *Reallexikon der Vorgeschichte*, i, pl. 53a; Evans, *Palace of Minos*, ii, p. 175. Neumann ("Entwicklung der Aunjetitzer Keramik in Mitteldeutschland," *PZ*, xx, 1929, p. 136) contends that the cup copies a local wooden model.

⁵ "The Early Bronze Age in Wessex," *Proc. Prehist. Soc.* iv, 1938, p. 95; *AM*, xxxiv, 1909, p. 278.

⁶ Szőreg 13, 53 and 114 and Deszk F47 (Varosi Museum) and Ószentiván 1929/3 (Archaeological Institute of University) noted in Szeged; Banner in describing the cemeteries (*Dolgozatok* vii, 1931) calls them "small beads of polished shell" and mentions twenty-one occurrences.

of the Perjamos type (fig. 9), and in two Moravian graves¹ with Aunjetitz pottery. Though the blue glaze is generally less well preserved, these beads, Dr. Stone assures me, agree perfectly in form and technique with those from Wiltshire and from Grave 1808A at Abydos, dated about 1400 B.C.² Now admittedly the coincidence of Perjamos and Aunjetitz³ may not be altogether exact, and Aunjetitz and Perjamos ceramic forms and even knot-headed pins and ingot-torques outlast the bounds of the Early Bronze Age or Danubian IV as defined by hoards.⁴ But even if the relevant graves be transferred to the beginning of the Middle Bronze Age (Reinecke B), it is difficult to admit that Perjamos jugs and Aunjetitz mugs persisted virtually unchanged for 1400 years or to spread over so long a period even the 180 graves of the Szöreg cemetery from which some of our beads come. Moreover Willvonseder⁵ found a very small blue segmented bead of the sort made in Egypt from 1600 to 1300 B.C. at Leopoldsdorf near Vienna in a grave with early Aunjetitz pottery still reminiscent of Bell-beaker ware. Taken altogether these undoubted imports provide a very cogent argument for the limiting date between 1600 and 1500 B.C. proposed by Åberg. And notoriously it is difficult to make a Bronze Age of two thousand years look credible outside the Central European and Britannico-Hibernian economic systems—in south France for instance.

Perhaps then it may be legitimate to consider a short chronology such as I have previously advanced on several occasions as a still plausible alternative to the long one outlined here. Till incontrovertible evidence from the geological or botanical side

Mesopotamia	Anatolia	Greece and Macedonia	Connecting traits	Danubian period	Date B.C.
	Troy VIIb	Sack of Vardino	Swords, urnfield wares	VI	1150
	Troy VIIa	L.H. III	Rapiers?, fibulae	V	1200 1350
Kassites	Troy VI Hittites	L.H. II-I Shaft graves	Segmented faience beads, amber, round-heeled daggers, halberd, Vapheio cups	IV	1400 1600
Hammurabi	Troy III to V	M.H.	Copper ?battle-axes	III	2000
Ur III	Troy II Alışar B	E.H. III	"Pintaderas," block vases	II	2500
	Troy II Troy I	E.H.	<i>Spondylus</i> shell ?	I	?

TABLE II

¹ From Nemčice na Hane and Jirikovice (near Brno) in the Moravske Zemske Museum at Brno.

² Beck and Stone, "Faience Beads of the British Bronze Age," *Archaeologia* lxxv, 1935, p. 224.

³ Childe, *Danube*, pp. 216-220; Nestor, *BRGK*, 22, pp. 84-89; Tompa, *BRGK*, 24-25, p. 75; Åberg, *Chronologie*, iii, 45.

⁴ J. Böhm, *Zaklady hálstatiské periódy v Čechách*, Praha, 1937, p. 40.

⁵ K. Willvonseder, "Gräber der älteren Bronzezeit von Leopoldsdorf," *Germania* xxi, 1937, p. 91.

makes it obsolete, it is still permissible to consider in conclusion how the low dating, endorsed by the fresh data just adduced, affects the general credibility of Montelius' hypotheses.

In our previous pictures of the Tigris-Rhine tract we shall have to transpose individual items to fit a Central European chronology based on synchronisms through Greece with Egypt and altogether independent of Asia. We then get two scenes both disclosing the cultural continuity and gradation recognisable only in the first picture on a long chronology. At the beginning of the Central European Bronze Age toward the middle of the second millennium B.C., the following zones could be distinguished:

- (1) The metropolitan civilisations of Egypt and Babylonia.
- (2) Relatively provincial civilisations in Crete, Syria and Hittite Asia Minor, but all fully literate and truly urban.
- (3) Bronze Age towns in western Anatolia and peninsular Greece whose walls may enclose from 4 to 11 acres and defend not only smiths but also specialised potters and many other craftsmen. Most are illiterate, but literate urban civilisation is already dawning at Mycenae.
- (4) In Macedonia and the Balkans and on the Middle Danube stable villages exist; their size can be estimated from the cemeteries comprising as many as 180 graves. Besides farming the only specialised industry is metallurgy, and commercial organisation is too rudimentary to make metal generally available for tools.
- (5) In Czechoslovakia and South Germany a similar economy reigns, but the settlements are less permanent and the maximum number of graves so far reported from a cemetery is 100.
- (6) In North Germany, Denmark and South Sweden are bands of herdsmen and small hamlets of self-sufficing peasants still equipped with only stone weapons.¹
- (7) In the extreme north the sole source of livelihood is food-gathering.

Fifteen hundred years or so earlier the gradations would be similar but the zones would have contracted. We should see:

- (1) In Egypt and Mesopotamia true cities whose walls may already enclose nearly 2 sq. miles, relieved from immediate dependence on environmental accidents by public works and organised commerce, comprising a variety of artisans and officials including scribes.
- (2) Smaller cities in Syria less richly equipped and only partially literate.
- (3) Copper Age townships in Anatolia and peninsular Greece with a walled area of 2 to 4 acres and a population comprising specialised smiths and some other craftsmen adequately provided by trade with metal and other raw materials.
- (4) In Thessaly, Macedonia and the Morava-Maros region beyond the Balkans neolithic villages are permanently occupied by experienced farmers who are content to do without metal.
- (5) North of the Maros Körös herdsmen and Bükkian troglodytes are grazing and tilling patches of löss and then moving on; still farther north Danubian I hoe-cultivators are shifting their hamlets of twenty-odd huts every few years to fresh fields till they reach the confines of the löss.

¹ See footnote 1, p. 21.

(6) Beyond these on the North European plain are only scattered bands of food-gatherers hunting, fowling and fishing and collecting nuts or shell-fish.

In each picture we see within a continuous area of interlocking cultures gradations such as would be deduced from the diffusionist postulate. But a comparison of the second picture with the first reveals just that expansion of the zones affected by the neolithic revolution that would be anticipated were its effects being indeed diffused. The acceptance of axiom 4, the rigorous application of his chronological method alone, would virtually allow the graphic demonstration of Montelius' remaining assumptions.

The bulk of the foregoing article was included in my Presidential Address to Section H of the British Association for the Advancement of Science at Cambridge in August, 1938, and I am indebted to the Council of the Association for permission to reproduce it here.

V. GORDON CHILDE

THE UNIVERSITY OF EDINBURGH

THE LOST PEDIMENTAL SCULPTURES OF BASSAE

THE disappearance of Greek sculptures has been a continuous process ever since the era of their creation. Warring Greeks, Roman collectors, mediaeval iconoclasts, Levantine lime-kilns, Renaissance restorers, and modern hoarders of antiques, all have successively contributed to the reduction of the number of surviving statues. Even of those that remain, the majority are either nameless or so disguised by amputations or restorations as to be unrecognizable. The special instance now to be investigated is one in which the statues have been so completely lost that even the fact that they ever existed in ancient times has been consistently denied.¹

The gabled fronts of Greek temples were frequently adorned with sculptured groups, of which those from the temple of Zeus at Olympia may be selected as typical examples, because of their excellent preservation. These Olympian pediments, described by Pausanias in 175 A.D., were disinterred exactly seventeen centuries later; little was missing, and there are only minor problems as to restoration. In the case of the Parthenon at Athens, where the pediments now lack sculpture (apart from three mutilated pieces on the west and a few modern casts on the east), we discern, nevertheless, traces of the bottoms of the figures on the pediment floors, and there exist drawings of the seventeenth and eighteenth centuries showing many of them in position, as well as several of the originals themselves, housed partly in the British Museum and partly at Athens. In such a temple as that of Poseidon at Sunium, where the upper portions of the structure have been demolished, it is possible to piece together the scattered blocks on the ground, as was done by Anastasios Orlandos, and to ascertain because of the presence of metal dowels that it had once contained sculpture, and even to identify as one of the missing sculptures a fragment discovered in the vicinity.

So far, we have not yet discussed "lost statues" in the sense in which I shall now use the term. An instance of "lost statues" is met in the case of the "Theseum" at Athens, where the gaping pediments are now absolutely devoid of sculpture, though the very definite cuttings, weathered traces, and other marks on the pediment floors prove that such decoration once existed and even give some suggestion of its arrangement. But it is futile to restore this lost composition in the manner of Bruno Sauer, purely from imagination; most of the statues in his drawings, furthermore, are completely out of scale with the temple. It is equally useless, I believe, to search among surviving fragments at Athens for pieces of these groups; for it seems clear that this is an instance of loss or removal in ancient times, a case of the vandalism so current in the days of the Roman empire, when Rome, and subsequently Constantinople, were adorned with the spoils of rifled Greek temples. The temple of

¹ This paper was delivered successively before the American Philosophical Society at Philadelphia and the Archaeological Institute of America at the General Meeting in Chicago, in November and December, 1936 (cf. *AJA.* xli, 1937, p. 111). Independently—for I had made no announcement of the content of these papers—the possibility of the identification of the Copenhagen-Rome Niobids has occurred to Professor B. Schweitzer of Leipzig, who kindly permits me to mention his corroborative opinion, while he courteously withholds his publication until my article can appear in printed form.

Apollo at Delphi, the Athenian treasury at Delphi, and the "Athenian temple" of Apollo at Delos, were others among the numerous cases of such vandalism.¹

In the foregoing instances of "lost statues" we know at least, from some sort of evidence, that there were statues that became lost. But when we turn to the lonely temple of Apollo at Bassae in Arcadia (fig. 1), which had attracted an excavating



FIG. 1.—TEMPLE OF APOLLO AT BASSAE

party as early as 1811–1812 because of the possibility of discovering pedimental statues, we have a very different story.

In the course of a preliminary discussion of the restoration of the sculptured frieze from Bassae,² I mentioned some new evidence with regard to the pediments, proving that these likewise, contrary to modern opinion, had been prepared to contain sculpture. "The evidence is derived from technical details of construction. All the published restorations indicate that the pediment background was composed of slabs set vertically as in the Athenian examples; but suspicions aroused by the discrepant numbers of slabs, varying from five to sixteen in the different restorations, are increased by the fact that no such vertical slabs exist in the vicinity of the temple. On the contrary, one finds blocks about 0.31 m. high with their ends beveled to fit the sloping cornice, and records of other blocks of the same kind exist in Haller's unpublished notebooks, showing unmistakably that each pediment background was constructed in six horizontal courses (fig. 2), such as no publication has yet suggested. And it is not only the construction that differs. Cockerell had inferred, because the background was not recessed to exceptional depth (as in the Parthenon and

¹ Presumably also the recently discovered temple of Ares in the Athenian Agora (*AJA.* xlii, 1938, pp. 1–4), rebuilt by Augustus, would have been deprived of its pedimental sculptures during the process. No fragments of such sculptures, at any rate, have been identified.

² *Metropolitan Museum Studies* iv, 1933, pp. 204–227.

at Aegina), that no pediment sculptures were ever intended. But our tympanum wall shows, for the entire length of the bottommost course on each façade, a groove 0.11–0.12 m. high and cut back 0.205 m. into the wall, such as could only have

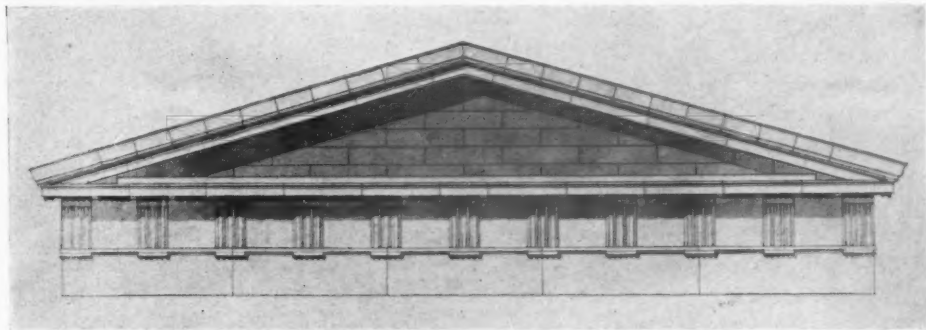


FIG. 2.—BASSAE. RECONSTRUCTION OF PEDIMENT

served to receive a plinth course or raised ledge supporting pedimental statues (fig. 3). Likewise at Olympia such a ledge must have existed, as we learn from weathered traces and the absence of foot cuttings on the pediment floor; in that case, however, no blocks of the backing wall have been identified. At Bassae, where the pieces of the pediment floor are too fragmentary to yield conclusive evidence,¹ we have the supplementary information that was lacking at Olympia: the construction was identical in both instances.”² In both, a marble shelf partly compensated for the shallowness of the pediment by throwing part of the weight farther back on the cornice, and in both the inner edge was held down by the superimposed weight of the tympanum, in the manner of a cantilever (fig. 3), just as later, in the Parthenon, iron cantilever beams were actually employed in this position.

It might be argued, in view of the fact that no fragments of pediment sculptures were ever found at Bassae, that the above-mentioned preparations were not actually utilized, the sculptures, for some reason or other, having been omitted as in the Propylaea at Athens.³ But such an argument would seem illogical because the abnormal shallowness of the pediments at Bassae (due in part to the exceptionally slight

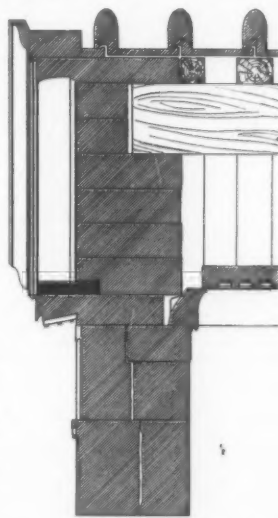


FIG. 3.—BASSAE, SECTION OF TYMPANUM

¹ It may be observed that these pieces of the pediment floors are so few and fragmentary that they were not identified by former investigators, who have measured only the flank cornice profile. The front cornice profile was found only by examining and turning over every possible fragment.

² *L.c.*, p. 225.

³ It is clear that the Propylaea were intended to have pedimental sculptures and acroteria, none of these being executed owing to the outbreak of the Peloponnesian War.

projection of the cornice) suggests that the architect originally had no intention of providing for sculptures at this point. In other words, the preparation for pediment sculptures seems to have been an afterthought, a fact evidenced also by the manner in which the grooves cut through and disregard the anathyroses of the tympanum joints, as if they had been cut after the erection of the pediments, the exact converse of the method employed in the Parthenon.¹ Such an addition, contrary to the architect's scheme, would undoubtedly have been made only at the time when the proposed pediment sculptures were nearly if not quite ready for insertion. In consequence, I came to the conclusion that "these enrichments of the façades had not been omitted; but modern explorers were anticipated by their Roman predecessors. Probably two of the pediment groups with which Augustus decorated the temples of his capital were stripped from Apollo's shrine at Bassae and transported to Bouzi on the west coast,² and thence to Rome."³ The natural communications, by valley and by sea, run westward from Bassae toward Italy. It is to Rome, therefore, that we are undoubtedly to follow in the hope of detecting, among the Greek original marble statues here unearthed in modern times, those which were rifled from the temple at Bassae.

* * * * *

In the effort to distinguish, among the Greek original statues found at Rome, those which might belong to the temple at Bassae, it is necessary to establish basic criteria. These must be the following: (1) pedimental character, (2) appropriateness of subject, (3) date, (4) style, (5) material, (6) height, and (7) depth of the figures.

(1) Pedimental character results partly from the fact that the statues were intended to be seen from one side only; the opposite side, in close conjunction with the pediment background, may be finished or unfinished,⁴ but in any case must have been invisible, and hence may be less carefully designed. For this reason there should be a certain affinity with the treatment of relief—which, in point of fact, pediment sculptures originally were; a certain flatness of conception, as if the statues were compressed between two parallel panes of glass, is to be expected, if not in simple standing figures, at least in those of more complicated poses for which the shallow pediment could not offer sufficient depth. Individual figures, furthermore, should not be self-sufficient but should suggest the existence of others with which they were associated in pedimental groups. Finally, if two or more figures can be identified, they should exhibit evidence of the gradation in height necessitated by the sloping top of the pediment.

(2) The subject should be one which is not absolutely inappropriate for a temple of Apollo. It might well, furthermore, be one which makes some allusion to Apollo's career; but the latter cannot be regarded as a necessity, in view of the fact that Greek temple sculptures often seem to bear slight relation to the divinities in whose honor they were created.

¹ In the Parthenon the cuttings for the cantilever beams were made before the dressing and erection of the tympanum blocks.

² A distance of about thirteen miles; the frieze sculptures were transported over the same route in 1812, on their way to Zante and thence to the British Museum.

³ *L.c.*, p. 224.

⁴ Both treatments are found in known pediment statues from other temples.

(3) The date of the missing sculptures should obviously be of the second half of the fifth century, and presumably of the quarter of a century lying between 445 and 420 B.C. It seems impossible to define closer limits in view of the varied possibilities offered by the temple itself. Its architectural design, if due to Ictinus as tradition reports, must be placed at an early stage of his career before he had adopted the new standards of Athenian architecture, in his studies begun in 447 B.C. for the Parthenon.¹ The latest of the sculpture, the frieze of the internal Ionic colonnade, is stylistically of about 425–420 B.C. Between these two dates apparently occurred an alteration of the internal design, as evidenced by a change of material and design in the Ionic capitals,² and also by a reversion to a more economical (presumably local) method of clamping the blocks at and above this level. Consequently we are unable to determine in advance whether the missing pedimental sculptures should exhibit the characteristics of the first period of erection (about 450–447 B.C.), or of the slow continuation apparently under local supervision, or of the final embellishment and completion (about 425–420 B.C.).

(4) The style of the sculptures might possibly be Attic, since the temple was designed, according to tradition, by the architect Ictinus whose career centered at Athens. But even the architecture reveals so many distinctively Peloponnesian traits, and was so obviously influenced by the neighboring site of Olympia, that we may reasonably expect the same influences to have characterized the sculpture. In short, it would be quite possible to imagine that the sculptor himself was not an Athenian, or, even if he were, that his work would have been profoundly affected by the pedimental sculptures of the temple at Olympia.

(5) The material should undoubtedly be white marble. This, furthermore, should not be the Pentelic marble of Attica, which played no part elsewhere in the temple. Nor is it likely to be the poorer local marble of Doliana, which was employed later in the pediment sculptures of Tegea but seems to be unrepresented at Bassae. Instead, we should preferably seek sculptures in a material imported from the Greek islands, such as was employed in the pedimental sculptures at Olympia, and apparently also in the metope and frieze sculptures at Bassae—though the latter, it must be admitted, do not seem to be of the usual Parian marble and probably were derived from some other yet unidentified island quarry.

(6) As a sixth basis of judgment, we come to the actual scale or stature of the human figures themselves. It is obvious that, as the pediments sloped down toward their extremities, the heights of the figures must have successively diminished. A moment's reflection will show that this would not have been accomplished, during the fifth century, in the manner of the Corfu pediment, where the central height is about 3.40 m., and the central Gorgon, if upright, would have been about 4.30 m. high as contrasted with the human figures of about 1.10 m. near the corners, a variation of nearly 400 per cent. Even in the fifth century, to be sure, colossal pedimental compositions such as those of Olympia or of the Parthenon were forced to include some gradation of the numerous figures, not solely by varied poses, but also by actual differences of stature; but in such cases we normally have a colossal divinity at the centre and successive reductions more or less skillfully disguised as we approach the

¹ Dinsmoor, *op. cit.*, p. 225.

² *Ibid.*, pp. 208–209.

extremities. But in a pediment of more moderate size with fewer figures, like those at Aegina, it was preferred to make all the figures of uniform stature, with the possible exception of a larger divinity at the centre. An investigation of the few fifth-century compositions now remaining yields suggestive results. I first show a table of the actual tympanum measurements, in examples for which we possess sufficient evidence, and of the measurements of the erect stature of human figures employed in such pediments, at centre, midway down the slope, and extremities.¹

	Tympanum			Stature of figures		
	Height	Depth	Length	Central	Intermediate	Angle
Parthenon	3.437 m.	0.860 m.	28.837 m.	ca. 3.13 m.	1.98-2.36 m.	2.45 m.
Olympia	3.18 m.	0.84 m.	25.09 m.	3.00-3.09 m.	2.51-2.67 m.	2.40 m.
Bassae	1.756 m.	0.366 m.	12.617 m.			
Aegina east	1.565 m.	0.63 m.	11.862 m.	(1.525 m.)	1.43 m.	1.43 m.
Aegina west	1.565 m.	0.63 m.	11.862 m.	1.525 m.	1.355 m.	1.355 m.
"Theseum"	1.527 m.	0.490 m.	12.468 m.			
Sunium	1.450 m.	0.41 m.	12.014 m.		ca. 1.25 m.	
Rhamnus	1.050 m.	0.329 m.	9.128 m.			

On the basis of this table, in turn, we construct another wherein the height measured at the centre of the triangular tympanum is taken as a standard, and the stature of the human figures is shown in percentages of this central height.

	Tympanum	Stature of figures		
	Height	Central	Intermediate	Angle
Parthenon	3.437 m.	91%	58-69%	71%
Olympia	3.18 m.	94-97%	79-84%	75%
Bassae	1.756 m.			
Aegina east	1.565 m.	97%	91%	91%
Aegina west	1.565 m.	97%	87%	87%
"Theseum"	1.527 m.			
Sunium	1.450 m.		86%	
Rhamnus	1.050 m.			

It seems evident that, to accord with fifth-century practice, a temple of moderate size should have its pedimental figures not only uniform in stature throughout any single pediment, but also equivalent to 86-91 per cent of the central height of the tympanum, with the possible exception of a central divinity as at Aegina. In accordance with this rule, we should search for statues between 86 and 91 per cent of the tympanum height of 1.756 m. at Bassae, namely, between 1.51 m. and 1.60 m. in erect stature. Since the temple at Bassae is one of the largest of the fifth-century temples of moderate size, any statues from its pediments should be clearly distinguishable from those of, say, the "Theseum," which should not be more than 1.31-1.39 m. high in erect posture.

(7) The depth of the pediment, being no more than the projection of the horizontal cornice beyond the frieze or architrave,² instead of being specially recessed as

¹ The dimensions of the pediments are based on my own measurements. The statures of the figures were measured from casts, and the totals calculated, by Miss Isabelle Kelly under my direction.

² The same is true, however, at Sunium, Rhamnus, Delos, and in the temple of Athena Nike at Athens, all planned for, or provided with, pediment sculptures. It must be admitted, nevertheless, that in none of these examples is the depth proportionately so little as at Bassae.

in the Parthenon, "Theseum," and temple at Aegina, was the feature which had induced Cockerell and subsequent authorities to conclude that there had been no pediment sculptures. It is, in proportion to the size of the temple, unusually shallow. The maximum depth of the pediment floor, measured to the nosing of the horizontal cornice moulding, was 0.415 m.; and the inserted raised ledge might have receded to the true face of the cornice, 0.366 m. from the tympanum background. It is possible, however, that the ledge was a little wider, though certainly no more than 0.38 m.; and the sculpture may even have protruded slightly beyond the face of the ledge.¹ In any case, the thickness or depth of the figures should be extraordinarily slight, in proportion to their size, as if they were compressed between two panes of glass no more than 0.40 m. apart, giving more of a feeling of relief technique than we find in any other known Greek pedimental groups composed of statues in the round.

In other words, we are to search for statues which were designed to form groups, seen from the front only, and of graded heights; of subjects not inappropriate for Apollo; of approximately the third quarter of the fifth century, preferably showing Peloponnesian characteristics and the influence of the temple of Zeus at Olympia; executed in island marble, between 1.15 m. and 1.60 m. in erect stature, and with a maximum depth not exceeding 0.40 m.

Judged by these criteria, we may reject, for instance, the Nike found on the Palatine at Rome,² an Attic original of about 425 B.C. Apart from its Attic origin, it is too small in scale, the erect stature being only 1.31 m. as restored, barely large enough for the "Theseum"; on the other hand, it is too deep for the pediments at Bassae, measuring 0.40 m. from the front to the extremely flat back, and presumably more at the bottom; and in any case it seems to have been a crowning acroterion rather than a figure within a pediment. Again, a fleeing girl in the Ny Carlsberg collection (no. 304) at Copenhagen,³ apparently found in or near Rome (obtained from a Roman dealer), is an original of the second half of the fifth century, in this case of more suitable marble, Parian. It is, furthermore, undoubtedly a pediment statue; a large cavity in the back, filled with lead, is a relic of an anchor which fastened it to the tympanum. But this again is too small in scale; the erect stature would be only 1.06 m. as restored, suitable for a small structure of the size of the Erechtheum. Next, the Alba youth also in the Ny Carlsberg collection (no. 400),⁴ apparently brought to Madrid from Rome in 1862, seems to be a Greek original, and is of Parian marble; the subject is variously interpreted, though it may well represent a Niobid and so come within Apollo's cycle.⁵ But the height of the total figure if standing would have been no more than 1.35 m., too small for the pediments at Bassae; on the other hand, the depth from front of knee to back of plinth is about 0.50 m., and thus requires a much deeper pediment than that at Bassae. These unsatisfactory dimensions, and certain technical details which are adverse to a fifth-century attribution, such as the roughly tooled joints for added patches, definitely eliminate it

¹ Compare the projecting figures in the Parthenon and Nike temple pediments, cited on p. 34, note 5.

² Robinson, in *Antike Plastik W. Amelung*, p. 202, fig. 1; Richter, *Sculpture*,² fig. 305.

³ *BrBr.* pl. 663; Lippold, *Ny Carlsberg*, pl. 6.

⁴ *BrBr.* pl. 649; Lippold, *op. cit.*, pl. 7.

⁵ Arndt suggested Hylas, Bulle preferred Tityos slain by Apollo, and Jacobsen regarded it as a Niobid.

from consideration. Probably the frequently suggested attribution to a pediment of the fourth century is to be preferred.

Our search finally leads us to a brilliant combination made between 1899 and 1907 by Furtwängler,¹ who brought together the scattered elements of a pedimental composition which had once been set up in the Gardens of Sallust at Rome. The three figures which definitely belong to this composition are the following:

(A) The prostrate body of a youth (fig. 4) in the Ny Carlsberg collection (no. 399)² was found in the Vigna Spithoever at Rome, the site of the Gardens of Sallust, apparently in 1886. It is reclining in a posture suitable for the left angle of a pedi-



FIG. 4.—DYING NIOBID YOUTH (A), COPENHAGEN

ment,³ and is, furthermore, curiously tipped up so as to lie in a vertical plane, sufficiently raised above the plinth to be visible from below, suggesting that it was placed at a high level.⁴ The lower legs are cut free from the plinth, their lack of support implying that they were seen from below, protruding over the edge of the cornice;⁵ such a diagonal position, far forward on the cornice, is favored also by two clamp holes at the back, worked in the drapery immediately above the plinth, evidently for the purpose of fastening the statue down to the pediment floor to prevent overturning.⁶ The subject was not immediately recognized; Arndt regarded it as a young man reclining on a cushion, without explaining a hole at the back of the neck. But

¹ Furtwängler, *SMA*, 1899², pp. 279–296 (“Ueber zwei griechische Originalstatuen in der Glyptothek” “Ny Carlsberg zu Kopenhagen”); *id.* 1902, pp. 443–455 (“Griechische Giebelstatuen aus Rom”); *id.* 1907, pp. 207–225 (“Die neue Niobidenstatue aus Rom”); *Aegina*, p. 328.

² Arndt, *Ny Carlsberg*, pls. 51–52; *BrBr.* pls. 710–711, 713; Lippold, *Ny Carlsberg*, pl. 5.

³ It was identified as a pedimental figure by Arndt (*Ny Carlsberg*, p. 81), even before Furtwängler’s combination was made.

⁴ Contrast the posture of the reclining youth of the Florentine Niobid group, lying flat on the ground and visible only if located below the eye.

⁵ Compare the position of the angle figure in the pediment of the temple of Athena Nike (*AJA.* xii, 1908, p. 401, fig. 2), and the foremost horse of Selene in the east pediment of the Parthenon.

⁶ Arndt had suggested that these clamps were imbedded in the tympanum background.

Furtwängler correctly interpreted the hole as an arrow-hole, and the figure, therefore, as a dying Niobid reclining on the natural ground,¹ a subject most appropriate for a temple of Apollo. The statue was universally recognized as a Greek original of the fifth century.² The material is Greek island marble, presumably Parian. The length (A-B) of the reclining figure is 1.674 m., and the height 0.62 m., but if placed erect its stature would have been slightly less, about 1.60 m.,³ fitting the pediment of a temple of medium size, and exactly suitable for the temple at Bassae. The plinth itself, 0.932 m. long, is only 0.087–0.185 m. deep, and one knee (D) protrudes forward 0.05 m., a shoulder (C) 0.135 m., causing a lack of stability which only the anchors could counterbalance. The maximum depth, 0.260 m., is well within the allowance for the pediments at Bassae.⁴

(B) The running figure of a maiden (fig. 5) in the Ny Carlsberg collection (no. 398)⁵ was found in 1873, likewise at Rome; at first the finding place was falsely given as the new quarters on the Esquiline hill, but by 1910 it had been ascertained that the figure was actually found in the Vigna Spithoever, and therefore very close to the dying youth.⁶ The figure is obviously designed to be seen only from the front; the drapery at the back is only sketchily treated, and a hole for an earring appears only in the visible left ear, not in the right ear, which was turned away from the spectator. The posture, as if running from some danger, looking back in terror, her knees failing under her, implies that she formed part of a group. And the figure seems designed to have been placed at a high level, seen from below; the length of the upper body allows for exceptional foreshortening, a fact which, combined with the evidence that it formed part of a group, implies a pedimental composition.⁷ The subject was variously interpreted as an *aura velificans* floating on her drapery (Pliny, XXXVI, 29), as a girl fleeing pursuit, as part of a representation of the abduction of the Leucippidae comparable to the mural paintings by Polygnotus in the Anaceum, or even – with intentional sarcasm – as Hermione fleeing from Orestes in a Lacedaemonian offering at Delphi (Pausanias, X, 16, 4). Association with the youth (A), however, convinced Furtwängler that she is another Niobid, or even Niobe herself. The last possibility was undoubtedly influenced by Furtwängler's idea that she stood exactly at the centre of a pediment; but the incongruity of representing Niobe as a running figure, and the fact that she can be excluded from a central position on the ground of dimensions,⁸ leave no doubt that she is merely one of the daughters. The date of the

¹ The plinth represents ground, not a cushion.

² By Arndt, Furtwängler, and all subsequent investigators with the exception of Pagenstecher (as cited below).

³ As scaled on photographs; Furtwängler's statement (*SMA*, 1899, p. 290) that the figure would be 1.50 m. high if upright is obviously a miscalculation.

⁴ The dimensions in plan were carefully measured for me by the architect Viggo Sten Möller, whom, as well as Dr. Frederik Poulsen, I have to thank for kind assistance.

⁵ Arndt, *Ny Carlsberg*, pl. 38–40; *BrBr.* pls. 712–714; Lippold, *Ny Carlsberg*, pl. 4.

⁶ Helbig, as quoted in *BrBr.* (1927). This rectified provenance brilliantly confirmed the theory of Furtwängler, who had been obliged to argue that they belonged together even though they were (apparently) found apart.

⁷ Furtwängler at first (*JdI*, 1891, *AA*, 70) regarded her as a copy of an acroterion; but association with the dying youth convinced him later that she was a pedimental figure.

⁸ I.e. it would have been uneconomical to have placed a collapsing figure at the centre of a pediment where the exigencies of design require a figure as tall as possible; see p. 32.



FIG. 5.—FLEEING NIOBID MAIDEN (B), COPENHAGEN



FIG. 6.—STRICKEN NIOBID MAIDEN (C), TERME MUSEUM, ROME

figure has generally been admitted to be the middle of the fifth century; but there has been considerable doubt as to whether it is an original of the period, or merely a later copy. The latter impression was due chiefly to the modern cleaning and reworking of the face;¹ but it is now generally conceded, on internal evidence, to be an original.² The material is identical with that of the statue of the dying youth (A). The figure is 1.42 m. high without the plinth, which is imbedded in a modern pedestal and cannot now be measured; on the analogy of the others (A, C) we may assume that the plinth was about 0.07 m., giving 1.49 m. in all. If she stood upright, however, her stature (excluding the plinth) would have been increased to about 1.60 m.³ The maximum width of the figure itself (C-E) is 0.882 m.; the maximum length (or width) of the plinth is 0.60 m., and the maximum depth at right angles to this width is 0.40 m., barely within the allowable limit for the depth of the pediment at Bassae.⁴

(C) The sinking figure of a maiden (fig. 6) in the Museo delle Terme (Museo Nazionale, inv. 72,274)⁵ at Rome, was found on June 16, 1906, in the ruins of a subterranean corridor or passage in ground belonging to the Banca Commerciale Italiana at Rome, adjoining the Gardens of Sallust and so only a few steps from the finding-places of the dying youth and running maiden in the Vigna Spithoever. Again we are dealing with a figure intended to be seen only from the front; the drapery at the back, while finished, is broadly worked and less carefully studied; and the remarkable thinness of the figure from front to back emphasizes the sensation of relief technique⁶ which is so appropriate for a pedimental composition.⁷ As for the subject, the jesting interpretation of the Copenhagen maiden as Hermione at Delphi was now seriously applied to this figure at Rome. In view of the arrow-hole at the back of the neck, however, it is only reasonable to accept Furtwängler's interpretation of her as a Niobid, brilliantly confirming his analysis of the Copenhagen pair. With regard to the date, opinion has been even more sharply divided than in the case of the Copenhagen maiden (B); for, in the case of the Terme maiden (C), it has been a question not merely of original or copy, but even of the date of the composition itself, variously construed as fifth-century or Graeco-Roman. But, though it was once regarded as an eclectic work of the first century B.C., subsequent judgment has been almost unanimous in treating it as a fifth-century original.⁸ The figure is carved in Greek island marble of the best quality, apparently Parian, like the two others. Including the plinth, it is 1.49 m. high to the top of the raised elbow,⁹ and

¹ The nose is restored, the corners of the mouth are thought to have been emphasized by drill holes in recent times, the face to have been cleaned with acids, smoothed with plaster, etc.

² Furtwängler himself at first regarded the maiden as a copy (*JdI.* 1891, AA. 70), but after examination of the statue itself in 1893 decided that it is an original. The originality has been accepted by most recent writers; for the objections by Arndt (since abandoned), Pagenstecher, Sauer, and Löwy, see p. 39.

³ Measurement calculated on photographs; the height from top of head to knee seems to be 1.16 m., and adding 0.44 m. for the lower leg we obtain 1.60 m. for the total stature.

⁴ The dimensions in plan were likewise measured by Möller.

⁵ *BrBr.* pls. 706-709.

⁶ Richter, *Sculpture*,² p. 27; for Kraiker's attempt to demolish this sensation of relief technique, see p. 39.

⁷ For the objections to a lofty pedimental location, as urged by Pagenstecher, Löwy, and Kraiker because of the assumed invisibility of the facial expression or of the drapery carved on the top of the plinth, see p. 39.

⁸ For the objections by Rizzo, De Ridder, and Löwy, see p. 39.

⁹ The height 1.55 m. given by Lanciani, and repeated by others (Gauckler, Waldmann), is excessive.

0.14 m. less, or 1.35 m., to the top of the head; but the stature, if she stood upright (excluding the plinth), would be 1.60 m., like the two others.¹ The maximum width of the figure itself is 0.98 m.; the maximum width (or length) of the plinth is 0.92 m., and the maximum depth is 0.39 m., and so within the allowable limit for the pediment at Bassae (fig. 7).²

With these three figures Furtwängler had combined a fourth, an Apollo with a cithara in the Ny Carlsberg collection (no. 63),³ acquired before 1894 from a Roman



FIG. 7.—COPENHAGEN AND TERME NIOBIDS IN RELATIVE POSITIONS

dealer, but of unknown provenance. It is generally regarded as a Greek original; the technique and style leave no doubt as to its date in the fifth century. The figure is 1.26 m. high at present, without the head but including the plinth; without the plinth, from neck to sole of foot the height is 1.18 m. Restoring the head, which at this scale would add about 0.26 m. more, we obtain a total of about 1.44 m. for the stature, or 1.52 m. including the plinth.

Hardly had these figures, two at first, then three, and finally four, been united by Furtwängler, when other scholars attempted to dismember the series. The first of these eliminations was justifiable. The Copenhagen Apollo reveals no evidence that it belonged to a pediment; and, in fact, the wind-blown drapery, billowing back from the figure, would hardly seem satisfactory against the solid background. Such a frontal figure of Apollo, furthermore, if in the same temple with the Niobids,⁴ must have occupied the exact centre of a pediment and so have equalled or exceeded all the other figures in stature. But, while the restored height of the Apollo (1.52 m.) is a little more than that of the Copenhagen and Terme maidens (1.49 m.), yet the scale

¹ The dimensions are taken on a cast; the height is 1.16 m. from top of head to bent knee, the lower leg 0.44 m., as in the Copenhagen maiden, giving 1.60 m.

² The dimensions in plan were carefully measured on the original by Miss Lucy T. Shoe, whose outline of the plinth, and locations of protruding parts of the sculpture, form the basis on which I was able to superpose the outline of the figure itself as derived from a cast.

³ Arndt, *Ny Carlsberg*, pl. 33; *BrBr.* pl. 715.

⁴ An Apollo Citharoedus, of course, would be inappropriate for the scene of the slaughter of the Niobids, and so would have occupied the other pediment of the temple. Furtwängler logically conjectured that the Apollo was on the main façade and the Niobids on the rear.

is considerably less, with a stature of only 1.44 m., whereas in the two maidens we attain 1.60 m. Not only because of pose and size does it seem desirable to reject this figure from the series;¹ additional objections are a difference in the species of marble (apparently Parian like the others, but more bluish in the fresh breaks),² and the more advanced development which suggests that the figure is about fifteen years later than the Niobids.³

Less successful, however, were the efforts to separate the three other statues associated by Furtwängler. Most of these attempts were based on doubts as to their originality. The Copenhagen youth (A), to be sure, has never been doubted except by one investigator.⁴ The Copenhagen maiden (B), however, has been rejected by several on the ground that she is a copy rather than an original,⁵ an opinion which is quite unfounded. And even the Terme maiden (C) has sometimes been viewed as an eclectic copy of the first century B.C.,⁶ or, even worse, a free variation from a missing figure of the Florentine Niobid group.⁷ With three different dates for the three figures, the possibility of associating them in a single group would, of course, become very remote. Fortunately, however, none of these scattered dates deserves serious consideration. Furthermore, while the fact that the figures were intended to be seen only from the front is usually conceded, a lofty pedimental position has been disapproved, particularly in the case of the Terme maiden (C), with the argument that her uplifted face and tormented mouth would have been invisible from below and therefore wasted on the spectator, who would see only neck and chin.⁸ But this would be true only from directly beneath, a point from which nobody would have thought of looking at the group; at a greater distance, and particularly at Bassae where the ground rises directly opposite each façade of the temple, the impression would have been satisfactory. Additional objections are based on the fact that the drapery covering the top of the plinth, and the dressing of other parts of the top to suggest rough ground,⁹ would have been definitely invisible from below if placed in a pediment.¹⁰ This must be admitted; but it must also be pointed out that such careful carving of drapery on the invisible tops of plinths is characteristic of Greek pediments, as evidenced by numerous examples among those of the temple of Zeus at Olympia. The most futile and subjective of these adverse arguments is the suggestion that the deep vertical groove which separates the drapery from the left thigh is too ugly to permit the assumption that the statue was seen directly from the flank,

¹ Other differences, such as the manner of inserting the head into the neck as a separate piece fastened by a dowel, might possibly be reconciled.

² Arndt first thought that the marble, very fine grained and with flecks of mica, was Pentelic; but Furtwängler insisted that it was Parian.

³ These objections to the inclusion of the Apollo have been advanced and supported by Arndt and Lippold, text to *BrBr.* pl. 715; Pfuhl, *JdI.* 1926, p. 145; Neugebauer, *JdI.* 1928, *AA.* 204, n. 1; Lesky, *RE.* xvii, 695; Kraiker, *RM.* 1936, p. 126, n. 1.

⁴ Pagenstecher, *SHA.* 1910², p. 5.

⁵ Arndt, *Ny Carlsberg*, pp. 67, 82 (an opinion retained until 1910, cf. Sauer, *ZfBK.* 1910/11, p. 132, n. 1, but subsequently abandoned); Pagenstecher, *op. cit.*; Sauer, *ZfBK.* 1910/11, p. 132 (though admitting that she may have been in the group, replacing a lost original); Löwy, *JdI.* 1927, pp. 133-135.

⁶ Rizzo, *NS.* 1906, pp. 444-445.

⁷ Löwy, *JdI.* 1927, pp. 133-135 (cf. Köpp, *GGA.* 1929, p. 167).

⁸ Pagenstecher and Löwy, as cited.

⁹ The latter objection would apply also to the Copenhagen youth (A), certainly a pedimental figure.

¹⁰ Kraiker, *RM.* 1936, p. 127.

and that it must have been concealed by a projecting fold of drapery, a result which could have been attained only by revolving the statue until it stood at forty-five degrees to the spectator, nullifying its "relief technique" and so increasing the depth as to make its location in any sort of a pediment impossible.¹ On the contrary, there can be no serious doubt that the three figures A, B, and C all belong to a single pedimental composition.

The existence of three figures (A-C) of the Niobid pediment, all found at one spot, in the Gardens of Sallust, though at different times (1873-1906), is almost conclusive evidence that the entire composition was once exhibited here.² In other words, other figures, perhaps as many as six, may still lie buried in the vicinity, or may have been found at one time or another. It is very suggestive, therefore, that Pirro Ligorio should have mentioned such a discovery: "In the ruins of what were once the Gardens of Sallust, in Rome, there were found some figures in high relief, and of the size of life, which likewise depicted the story of Niobe"; and we are assured by Pirro Ligorio, who mentions the fact in his manuscripts in the Vatican Library, that the execution of them was very beautiful.³ It is true that Ligorio mentions them as high reliefs; but it is conceivable that Ligorio wrote from hearsay, or that Winckelmann misinterpreted him. In any case, it seems most improbable that there is any confusion with the later Niobids now at Florence, which were discovered in a very different part of Rome, near the Lateran on the south side of the city, just before February 22, 1583; whereas Ligorio left Rome and was installed at Ferrara from 1572 until his death, which occurred on Oct. 30, 1583. Whatever these sculptures may have been, they have apparently disappeared. Nor can we recognize with certainty any other fragments of Niobids discovered in this region. Some may still remain concealed under modern buildings;⁴ others may exist in known collections unrecognizable because of modern restorations. For instance, the so-called "Narcissus" of the Uffizi, in Florence,⁵ clearly bears no relation to the great Florentine group of Niobids, though it is almost certainly a son of Niobe clutching at an arrow in the back of his neck. The workmanship of the unrestored portions suggests that it may be a Greek original; but the whole work is so disfigured by modern restoration, and is so inadequately described as to dimensions and material, that further examination is necessary before making a decision.⁶

¹ Kraiker, *RM.* 1936, pp. 126-133. He assumes that the three statues A-C, with thirteen hypothetical companions (the total including Apollo, Artemis, seven maidens and seven youths), were placed on a low pedestal in a niche, possibly semicircular in plan. Such may possibly have been the final disposition in the Gardens of Sallust; but it was hardly the situation for which the figures were designed.

² On the occasions of the successive discoveries of these statues no adequate observations of the manner of their burial were preserved. Consequently we have no means of knowing how they were exhibited in the Gardens of Sallust, or of their relationship to the various sanctuaries there.

³ Winckelmann, *Gesch. d. Kunst*, book IX, ch. II, 30. Ligorio's MSS. concerning antiquities deserve reexamination under modern conditions.

⁴ Amelung noted that in a wall of a domed room in the Piazza Sallustio was immured a fragment of a replica of the pedagogue in Florence (*BrBr.* text to pls. 706-715, p. 7, n. 1). But this very similarity to the Florentine series is evidence that it bears no relation to the fifth-century group.

⁵ *BrBr.* text to pls. 706-714, p. 8, fig. 4.

⁶ The head and neck, both arms (except the trace of the left hand on the back), and half of the left foot, together with the lower part of the base, are modern. The published height of 1.03 m., if measured to the top of the restored hand, would indicate that the statue is far too small.

It has also been impossible to identify later (Graeco-Roman) copies of missing originals of our Niobid group. The youth from Subiaco, in the Museo delle Terme at Rome,¹ is admittedly a Roman copy and not an original; it was proposed by Furtwängler, however, as a copy of a figure from our Niobid group, on the assumption that it represents a Niobid and that the soft modelling was an innovation of the Roman copyist. Others, while not directly connecting it with our Niobid group, argued that its original was of the fifth century, while most preferred the fourth century, and others again the beginning of the Hellenistic period. The subject also has been variously interpreted as a fighting or wounded warrior, a runner, a jumper or sailor, a discobolos or lasso-thrower, a wrestler or ball-player, an archer or slinger, Ganymede, Hylas kneeling in water, or a Niobid. Whatever explanation we adopt, there is an insuperable objection to combining it with our group, namely, its size. In erect posture, restoring the head, the total height would be about 2.02 m., implying that the Roman copyist had adopted the unusual procedure of enlarging his original by 25 per cent. And even if the maximum thickness of 0.465 m. were reduced in proportion to this assumed enlargement, the corresponding thickness would have been 0.372 m., making the body actually tangent to the tympanum plane behind. In short, the Subiaco youth lacks the essential quality of relief-like flatness, and must, therefore, be discarded. Similar objections apply to the "Ilioneus" now in the Glyptothek at Munich,² discovered at Rome between 1556 and 1562, and likewise frequently interpreted as a Roman copy of a Niobid. Like the Subiaco boy, it is usually assigned to the fourth century because of its softer modelling, but sometimes to the Hellenistic period; it certainly has no connection with the great Florentine Niobid group. Again, however, we must refrain from associating it with our pediment, if for no other consideration than that of size. The height, to be sure, would have been about 1.645 m. if the figure stood erect (apart from the plinth of 0.09 m.), and so almost in scale with the Niobid pediment. But the maximum thickness (from left shoulder to right thigh) is 0.46 m., much too great for the pediment, showing nothing of the relief feeling which we have learned to expect.

For the present, therefore, our study must be limited to three of the four Greek original statues linked together by Furtwängler. With regard to their location, he had immediately suggested that they adorned a temple of Apollo,³ and regarded this as certain when he added the figure of Apollo Citharoedus to the series.⁴ He at first argued, furthermore, that this temple of Apollo was the "Theseum" at Athens, of which the pediment sculptures are missing; and this he proposed to identify as the temple of Apollo Patroos.⁵ Adverse evidence, the discrepancies between the shapes of the statue plinths and the outlines of the traces on the "Theseum" pediment floors,⁶ caused him to relinquish his theory;⁷ but he still argued that they must have

¹ *BrBr.* pl. 249.

² *BrBr.* pl. 432.

³ Furtwängler, *SMA.* 1899, p. 286.

⁴ *Ibid.* 1902, pp. 447-449.

⁵ *Ibid.* 1899, pp. 290-293.

⁶ The discrepancy in scale, with figures uniformly 1.60 m. high if erect, is an insuperable obstacle to placing them in a tympanum only 1.527 m. high at the centre.

⁷ Sauer objected to the association with the "Theseum" because of disagreement with the traces on the pediment floors (*Theseion*, p. 263, note on p. 189); and Furtwängler himself, after a special examination, retracted the theory (*SMA.* 1902, p. 449). Now, of course, the identification of the actual foundations of the temple of Apollo Patroos (*Hesp.* 1937, pp. 77-115), of fourth-century construction, would in any case invalidate the suggestion.

come from a temple of Apollo corresponding in size to the "Theseum," noting, however, that this temple need not have been located in Athens. And even now, though we have eliminated the Apollo Citharoedus, Furtwängler's claim that the figures are to be assigned to a temple of Apollo seems the only logical course. Picard, suggesting that the Terme maiden was perhaps the inspiration of the sacrificed Polyxena in the *Hecuba* of Euripides, would still prefer to seek an appropriate temple in Attica.¹ But here no temple of Apollo dating from the right period is to be found; nor, in fact, is there any temple of suitable size belonging to this period. The "Theseum" at Athens, and the largest temples at Sunium and Rhamnus, in which we should expect an exceptional employment of Parian marble, are all, nevertheless, too small. The recently discovered temple of Ares in the Agora, belonging stylistically to the same group, is slightly larger, with a width of 15.048 m. on the horizontal cornice;² but, since the pedimental slopes in the Attic Doric temples of this period vary only between $1:4\frac{1}{3}$ and $1:4\frac{1}{2}$, it would seem that the height of the pediment, measured to the apex of the cornice, was between 1.736 m. and 1.843 m., and that of the tympanum between 1.475 m. and 1.582 m.³ The pediment statues required by such dimensions would be only between 1.27 m. and 1.44 m. in erect posture. It is, therefore, outside Attica that we must search for a temple of the proper date and dimensions capable of receiving pedimental statues with erect heights of 1.60 m., a temple to which the other basic criteria would likewise apply. And outside Attica the number of suitable candidates is remarkably limited. The limitation is partly due to the fact that the requirements point to a temple of unusual size, too small to be regarded as colossal, yet larger than the ordinary. Such is the temple at Bassae, which, though almost identical in width with the temple of Ares, demands larger pedimental figures because of the steeper angle of the slope.

The date of the Niobids, as shown particularly by a pre-Pheidian spirit, an intermingling of crisp archaism with freedom of treatment, clearly lies, at least in spirit, between the pediments of Olympia and those of the Parthenon. Arndt first suggested about 460–450 B.C., while Furtwängler advocated the following decade 450–440 (preferably nearer 440 than 450),⁴ Lawrence 450–435,⁵ and Picard the time after Pheidias.⁶ Probably a date of about 440 B.C. best suits the conditions; and this lies within the quarter of a century postulated for the temple at Bassae.

The style of the figures has given rise to very varied interpretations. Robert and Lippold compared the Copenhagen maiden (B) with the "Iris" of the east pediment of the Parthenon.⁷ Arndt had likewise associated her with the Attic school, though

¹ Picard, *Sculpture ant.* II, p. 44.

² I was enabled to study this temple through the generosity of T. Leslie Shear, and have prepared a restoration for publication in *Hesp.* The dimensions here given are quoted with his permission.

³ Assuming that the height of the raking cornice, like that of the horizontal cornice, was identical with that at Sunium (0.215 m.), we subtract 0.221 m. for the vertical height of the raking cornice and also 0.040 m. for the amount by which the pediment floor rises above the flank cornice.

⁴ Furtwängler, *SMA*, 1899, p. 286; 1902, p. 450. This is the solution now generally adopted; cf. Schrader, *Phidias*, *Zeittafel* at end; Richter, *Sculpture*², pp. 9, 42, 124 n. 25.

⁵ Lawrence, *Classical Sculpture*, pp. 213–214.

⁶ Picard, *Sculpture ant.* II, p. 44 (Furtwängler also had originally dated B later than Pheidias, *JdI*, 1891, *AA*, 70).

⁷ Robert, *21. Hall. Winckelmannsprog.* p. 33; Lippold, *Ny Carlsberg*, p. 10.

in the Copenhagen youth (A) he professed to see Polykleitan characteristics.¹ Curtius thought that the youth was carved by the sculptor of south metope XXVIII of the Parthenon.² Furtwängler, on the contrary, insisting that the figures are from a totally different school than that of Pheidias, associated them with the "Theseum" of which at that time he attributed the sculptural decoration to Kresilas.³ Sauer, likewise on the ground of resemblance to the "Theseum" frieze sculptures, assigned the Niobid gable to the same master, whom, after some hesitation, he identified as a pupil of Myron, perhaps even Lykios the son of Myron.⁴ Schrader employed the Niobid gable as one of the cornerstones in erecting his conception of the style of Callimachus.⁵ Meanwhile, after the rejection of his attribution of the group to the "Theseum" itself, as discussed below, Furtwängler emphasized the superficial resemblance of the Niobids, and particularly of the Copenhagen Apollo wrongly associated with them, to the Xanthian Nereids and to other works which he had regarded as exemplifying the Ionic tendency, and suggested that the sculptor was an Ionian.⁶ Kraiker goes farther and even suggests a Parian sculptor.⁷ Others, on the contrary, have associated the Niobid group with Peloponnesian work. Arndt, as noted above, had associated the drapery of the Copenhagen youth (A) with the Olympia pediments, but the head with the work of Polykleitos. Michalowski argued that the very details employed by Sauer to demonstrate the resemblance to the Myronian school were in reality adverse to his theory, and that the resemblances point rather to the Polykleitan school of Argos.⁸ Furtwängler stressed the relationship to the pediments at Olympia.⁹ Picard and Lawrence thought of Paionios of Mende and his Victory at Olympia.¹⁰ Wolters and Neugebauer even found close resemblances to the frieze at Bassae.¹¹ In short, Neugebauer concluded with forcible arguments that the Niobid gable fills a gap in our knowledge of the Peloponnesian school, dating midway between the pediments at Olympia and the frieze at Bassae.¹² The next step, the stylistic attribution to the pediments at Bassae, is but a short one.

¹ Arndt, *Ny Carlsberg*, pp. 66, 82.

² Curtius, *Gnomon* 1926, p. 21.

³ Furtwängler, *SMA*. 1899, pp. 287-296.

⁴ Sauer, *Theseion*, pp. 189, 217, 222, 263, 264; *CR Cong. Cairo*, 1909, p. 209; *ZfBK*. 1910/11, pp. 132-138 (cf. *Ausonia* 1909, Notiz. 94; *RA*. 1909², p. 438). Julius (*AdI*. 1878, pp. 202-210) had previously attributed the "Theseum" sculptures to Lykios. Against the Myronian connection see Pfuhl, *JdI*. 1926, p. 144; Michalowski, *Eos*, 1927, pp. 181-189; and against the similarity to the "Theseum" friezes see Arndt and Lippold, *BrBr*.

⁵ Schrader, *Phidias*, pp. 322-335. Against this, Curtius, *Gno*. 1925, p. 17; Michalowski, *Eos* 1927, p. 186.

⁶ Furtwängler, *SMA*. 1902, pp. 446-450 (cf. *AZ*. 1882, pp. 360-364; *Meisterwerke*, p. 220, n. 4 = *Masterpieces*, p. 450, n. 2; Lechat, *REG*. 1899, pp. 197-198; Buschor-Hamann, *Skulpturen des Zeustempels zu Olympia*, p. 37; Pfuhl, *JdI*. 1926, pp. 142-147. Admitting the resemblance to the Xanthian Nereids, Neugebauer suggested that even these latter were executed under Peloponnesian influence (*JdI*. 1928, *AA*. 207).

⁷ Kraiker, *RM*. 1936, pp. 136-137.

⁸ Michalowski, *Eos* 1927, pp. 181-189.

⁹ Furtwängler, *SMA*. 1907, pp. 210, 211, 214; Rodenwaldt (*Kunst d. Antike*, p. 32) admits only general resemblance to Olympia.

¹⁰ Picard, *Sculpture ant.* II, p. 44; Lawrence, *Classical Sculpture*, pp. 213-214.

¹¹ Wolters-Springer, *Kunstgesch.* I² (1923), p. 307; Neugebauer, *JdI*. 1928, *AA*. 204.

¹² Neugebauer, *JdI*. 1928, *AA*. 203-208 (admitting also the possibility of a South Italian offshoot of Peloponnesian schools). He compares the head of the Copenhagen maiden with that of the bride in the west pediment at Olympia and with that of a Lapith woman in the frieze at Bassae.

The marble employed in these three figures is white, of a somewhat coarse grain, recognized by Arndt as Greek, and by Furtwängler more definitely as Parian.¹ The workmanship is uniform in all three, with peculiarities which emphasize not only their common source but also their fifth-century origin. Noteworthy are the numerous patches or applied pieces, fastened by dowels or pins of metal, or merely by cement, against smoothly finished joint surfaces. Very similar treatments occur throughout the Olympian pediments. Characteristic also are the many bored holes for bronze accessories. The plinths are treated in a uniform manner, the rough outline following approximately the contour or plan of the figure but allowing certain parts to protrude beyond it, particularly the legs and arms of the Copenhagen youth (A) as described above, but also the right foot and the inserted front part of the left foot of the Copenhagen maiden (B), and the left foot of the Terme maiden (C); these protruding portions are all finished on the under surfaces, and would stand inspection from below. Drapery covers large portions of the tops of the plinths of the two maidens, and to a lesser extent behind the shoulders of the Copenhagen youth (A); the portions not so concealed are uneven, worked with a bull-nose chisel to suggest rough ground, with little hillocks to form more elevated supports under the shoulders of the youth and under the right foot of the Terme maiden. The plinths are greatly reduced in thickness at the front edges, to 0.05 m., but are somewhat higher at the back edges, so that their surfaces slope forward; the drapery falls over the front edge in the case of the Terme maiden, and probably also in the other maiden. It is generally assumed that the chamfered or undercut edges imply that the plinths fitted into depressions or were partly countersunk in the pediment floor;² this does not seem to be a necessary inference in the case of the two Copenhagen figures, and indeed is hardly possible in the Terme maiden. Clamps to anchor the plinth to the floor occur only in the unsteady angle figure A.³

In other words the three Niobids, assigned by Furtwängler to a nameless pediment, fit all the requirements of the temple at Bassae. Pedimental character, subject, date, style, material, height, and depth are all in conformity. It might possibly be objected that the surfaces of the figures are unusually well preserved for statues in an exposed location; but such an objection would apply, not so much to their specific identification, as to their generic interpretation as pediment statues, and the latter is unquestionable. We must remember, furthermore, that in ancient times these surfaces were weatherproofed with wax by the encaustic or *ganosis* method, perhaps several times renewed; and this would have protected them for the few centuries during which they stood on the temple. Their removal to Rome, and their exhibition perhaps in a sheltered situation in the Gardens of Sallust, as well as their long burial,⁴ would account for the freshness of the surfaces as contrasted with the weather-beaten statues from the Parthenon. Another possible objection is that, in the absence of actual silhouettes of the plinths on the pediment floor, direct connec-

¹ Furtwängler, *SMA*. 1899, p. 282; 1907, p. 210. Accepted by Arndt and Lippold, *BrBr.*; Kraiker, *RM*. 1936, p. 136.

² Furtwängler, *SMA*. 1907, pp. 222-223; Rizzo, *NS*. 1906, p. 444; Arndt and Lippold, *BrBr.*; Kraiker, *RM*. 1936, pp. 126-128.

³ For similar clamps at Olympia, see Treu, *JdI*. 1895, p. 24.

⁴ Compare several of the heads from the pediments at Olympia.

tion with Bassae cannot be proved, and that Greece was so populated with temples, many still undiscovered, that we cannot justifiably single out one definite example. But the great majority of temples mentioned by Pausanias were not of very monumental character; and most of these certainly lacked pedimental sculpture. How long a list could be drawn up, comprising temples of Apollo or Artemis or Leto, constructed between 450 and 420 B.C., with gable tympana between 1.755 m. and 1.860 m. high but only 0.40 m. deep, filled with sculpture, carved in island marble, and in a style which points to Peloponnesian affiliations? I submit that the mathematical chances against any other than the temple at Bassae are overwhelming.

Our next problem is that of restoration. The only published restoration, drawn for Furtwängler before the discovery of the Terme maiden (C), was based on the theory that they come from the "Theseum" at Athens, and therefore repeats the inadequate dimensions of the "Theseum."¹ The Copenhagen Apollo is erroneously placed at the centre of one pediment, the Copenhagen maiden at the centre of the other, with the Copenhagen youth in the left corner. Since the discovery of the Terme maiden, no restoration has been published, though it was finally suggested by Furtwängler that she was taller than the others and so should be placed at the centre of the pediment, with the Copenhagen maiden at the right.² The collapsing pose of the Terme maiden, however, is unsuitable for an axial position,³ and her assumed greater height is a mathematical delusion: both statues (B, C) were identical in height, 1.49 m., the former with the plinth restored, the latter measured to the top of the raised elbow.⁴ Both, furthermore, if they stood upright, would likewise have been identical in stature, 1.60 m. It might be argued, perhaps, that the Terme maiden stood farther from the axis of the pediment than did the Copenhagen maiden, on the ground that the height 1.49 m. is measured in C to the top of the elbow, the head being 0.14 m. lower and so only 1.35 m. above the ledge as contrasted with 1.49 m. in B, assuming that the raised arm of C extended upward into the soffit of the cornice. But, with the given pedimental slope of 1:3.592, a difference of 0.14 m. in level of heads would suggest a lateral difference of only 0.50 m. between centres of heads, so small as to be meaningless; actual juxtaposition of the two maidens shows that their heads must have been at least 0.95 m. apart on centres, occupying so much space that it would be impossible to place both maidens in the same half of the pediment. We must infer, therefore, that they were in different halves of the pediment, forming exact counterparts, both 1.49 m. high, the top of the elbow of one corresponding to the top of the head of the other. As for the distinction between them, the upturned face of the Terme maiden could hardly have gazed directly into the descending cornice of the left half of the pediment, proving that she must have stood in the right half, where her face would be illuminated through the greater height at the centre, and the sloping line suggested by elbow and head would harmonize with the sloping

¹ Furtwängler, *SMA*, 1902, p. 453; *Aegina*, p. 328.

² Furtwängler, *SMA*, 1907, pp. 223-224. Della Seta (*Ausonia* 1907, p. 13), Löwy (*JdI*, 1927, p. 133), and Arndt and Lippold (*BrBr.* p. 8 of text to pls. 706-714) also followed this erroneous reasoning and placed B at the right of C.

³ This is also the opinion of Pfuhl, *JdI*, 1926, p. 142, n. 5.

⁴ For B is measured as 1.42 m. from the top of the plinth, and C as 1.49 m. from the bottom of the plinth, the omission of the plinth of B accounting for her supposed less height.

cornice.¹ We thus obtain a very general idea of the composition (fig. 8), with the following distribution of the figures, $A+x+B+y+C+z$, wherein y is the central composition between B and C , and $z=A+x$.

In fig. 2 one of the pediments of the temple at Bassae has been reconstructed to scale,² with the masonry shown in accordance with the new evidence, but without the statues. The central height is calculated as 2.092 m. to the apex of the raking

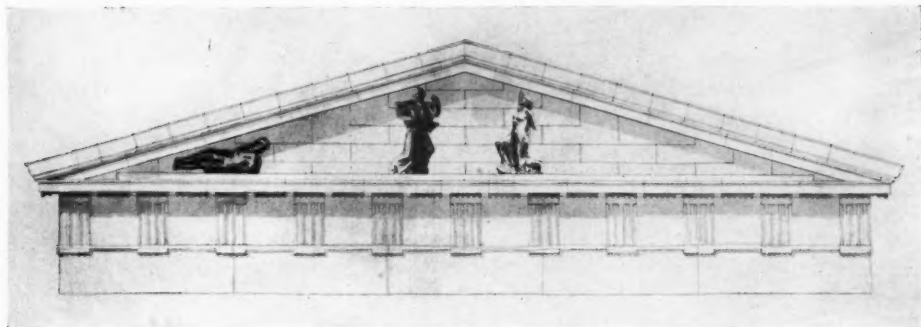


FIG. 8.—BASSAE, THREE EXTANT STATUES IN PLACE

cornice (2.419 m. to the apex of the raking sima), and 1.866 m. to the top of the tympanum, measured above the pediment floor. Inserting the raised ledge of 0.11 m., the central height of the tympanum is reduced from 1.866 m. to 1.756 m., and the length of the tympanum from 13.405 m. to 12.617 m. Within this triangular frame we now place the three statues (fig. 8). The reclining figure A is adjusted to the left angle, while B and C are arranged to balance one another and to be suitably related to the sloping cornice. By this graphic method we see that the gap (y) between B and C is sufficient for only one figure, while between B and the angle figure A remains a gap (x) sufficient for two figures. Between C and the right angle of the pediment is a space (z) sufficient for two corresponding figures as well as the missing counterpart of A . Thus the total number of figures in the pediment, $A+2+B+1+C+3$, would have been nine.

With space for only one figure at the centre, we cannot restore both Apollo and Artemis. Nor could we well place here Apollo alone, shooting down his victims; for both maidens are clearly running or turning toward the central figure for protection. The missing figure might preferably have been Niobe herself, toward whom the Copenhagen and Terme maidens are turning for shelter.³ In accordance with the remaining space, we may assume that Niobe was accompanied by only four of her sons and four of her daughters (fig. 9).⁴ Just as in many other Greek sculptures

¹ Pfuhl likewise preferred to place C in the right half of the pediment.

² Figs. 2, 8–9 drawn under my direction by Miss Elizabeth Wadhams.

³ Sauer (*ZfBK*. 1910/11, p. 132) infers that Niobe would have been omitted, as Furtwängler (*SMA*. 1902, p. 452) had admitted to be possible on the analogy of the Niobid krater in the Louvre (G341); cf. Furtwängler-Reichhold, *Gr. Vasenmalerei*, pl. 108.

⁴ Sauer (*l.c.*) suggests that a composition of this early period would have simplified the scene to the extent of omitting some of the children.

the victors are not shown but implied, so here Apollo and Artemis, the far-shooting divinities who could not appropriately have appeared within elbow distance of their victims, were suggested only by their arrows, which all came from the right.¹

The pedimental group thus restored may be assigned to the south pediment of the temple at Bassae, in accordance with the general fifth-century law that such scenes of turmoil should be placed on the rear of a temple. We may infer that a



FIG. 9. — BASSAE, PEDIMENTAL GROUP RESTORED

more quiet and dignified scene, of which the subject and remains are yet unidentified, adorned the northern façade.

In every investigation of Greek sculpture one is tempted to ascertain the identity of the responsible artist. Here, therefore, I venture to make a suggestion. The statues initiate a series remarkable for their elegance of drapery; they exhibit some of the earliest known traces of a new instrument, the running drill; and a certain virtuosity of technique finds expression in the inlaying of small details with separate bits of marble.² All these are characteristics of an elusive figure known directly only from literary references; the connection with Bassae strengthens Schrader's attribution of the three Niobids as based on the style of the drapery alone, namely, to the inventor of the Corinthian capital used first within this very temple, the Benvenuto Cellini of ancient Greece, the sculptor-architect Callimachus.

WILLIAM BELL DINSMOOR

COLUMBIA UNIVERSITY
NEW YORK

¹ The gods were often represented in more pictorial representations of the Niobids, both in vase painting (Niobid krater in Louvre) and sculpture (throne of Zeus at Olympia, Pausanias, V, 11, 2), etc. But they were omitted from the great Florentine group (just as the victors were also omitted from the Attalid offerings at Athens). Their omission from our Niobid group was inferred also by Furtwängler (*SMA*, 1902, p. 454) and Sauer (*l.c.*). Pfuhl (*JdI*, 1926, p. 142 n. 5) nevertheless preferred to restore the two gods shooting toward either side from the centre.

² Apart from the numerous patches executed with minute care, the nipples of the dying Copenhagen youth (A) are inlaid with marble which is so indistinguishable from that of the body as to raise the question of utility. Compare the analogous "eyes" of the marble Ionic and Corinthian capitals within the temple, perhaps the work of Callimachus.

THE FOURTH CAMPAIGN AT OLYNTHOS

THE excavations at Olynthos, conducted by the Johns Hopkins University and Washington University, under the auspices of the American School of Classical Studies in Athens, were resumed on March 28, 1938, and continued until June 18. In this fourth campaign Washington University of St. Louis joined, lending us the services of George E. Mylonas. We had a staff of eighteen and an average of about one hundred workmen.¹

During this campaign work was carried on in various parts of the site, but especially on the North Hill, on the East Spur Hill, in the valley between these two hills, and in the Villa Section to the southeast.

On the North Hill we excavated completely blocks B VI and A VIII² and the northern half of block A IV. Two of these blocks included the usual 10 houses, so that 25 new houses were uncovered on the North Hill,³ giving a total of more than 100 houses excavated during the course of the four campaigns. It now remains to excavate blocks IX and X, which lie between the areas excavated this year and in previous campaigns, to clear the western half of the North Hill, but since it is certain that these blocks will include the usual ten houses, the complete plan of the hill could be considered as established. The investigation of the valley brought to light very interesting remains and defined further the Hippodamian plan of the residential north section of the new city. In this valley not only street V was followed through its entire length, but also streets VI, IV, III, II, I were located. East and west streets were also found south of the point from which we began numbering the Olynthian streets, and these we named -I, -II, -III, -IV to -IX. Avenues D, E and F were further investigated. Avenue D at the bottom of the valley proved

¹ We are indebted to all the staff, to the loyal workmen and foremen, to the Ephor of Macedonia, N. Kotzias; to Professor George P. Oikonomos, General Director of Letters and Fine Arts, to Dr. Spyridon Marinatos, Director of the Greek Archaeological Service; to Ch. Makaronas, *epimeletes* of the Archaeological Museum of Thessalonika, who was the representative of the Greek government till May 1; to George Bakalakis, *epimeletes* of Eastern Macedonia and Thrace and of the Museum of Kavalla, who was representative of the Greek government from May 1 to June 18, both of whom helped in the supervision of sections of the excavations. We should like also to thank Miss Lucy Talcott of the Agora staff in Athens for help in purchasing equipment and for many valuable suggestions. The additional staff was composed as follows: David M. Robinson, director-in-chief, George E. Mylonas, field director (daily journal); Austin Harrison and Christos P. Lefakis (also artist), architects; Mr. Talalaief and A. Schmidt, engineers and surveyors; Alice B. Robinson (cataloguer), Mrs. David M. Robinson (in charge of commissary department, cleaner and cataloguer of coins), A. F. Albright (graves and street-system and vases), John Alexander (terraccottas), Mr. and Mrs. John Lawrence Angel (anthropology and graves), John R. Craft (Leica photographs for note-books and catalogue cards and coins), Dr. and Mrs. Lloyd Daly (miscellaneous finds and typing), William McDonald (bronzes, lamps), Euripides Melanides (photographer). Apostolos Kontogeorgios again cleaned, mended and restored the antiquities. Supervision of the various sections of the excavation was exercised only by the male members of the staff under the constant presence and guidance of the two directors. Konstantinos Tsiros again proved to be a capable foreman. We kept no detailed record of the amount of earth removed but about 10,000 baskets or sixty tons of earth were excavated in a day. The excavation cost more than \$10,000. About \$4,000 were contributed by some fifty persons, mostly in Baltimore. Jacob Blaustein gave \$1,000 and Miss Julia Rogers \$500. The \$6,000 balance was contributed by David M. Robinson.

² Cf. Robinson-Graham, *Olynthus*, VIII (*The Hellenic House*), 1938, pl. 109.

³ *Ibid.* pp. 70-138, pls. 18-109.

to be more than 9.50 m. broad; it certainly served also as a drain, and ran the whole length of the North Hill and of the valley, diagonally southeast from street II. Avenue E on the East Spur was traced from the north edge of the North Hill south. At its intersection with street II, at a point where the avenue descended abruptly to the south, its cobble-stone pavement (5 m. wide) was exposed for 18 meters; and at its intersection with street I, its pavement was cleared for a length of 10 meters. At regular distances of a meter and a half cross ruts were made to carry off the rain water which would accumulate there. Traces of Avenue E were found much farther south and it evidently merged into Ave. D at street—III. A slight variation in orientation was noted in the plan of the section east from the East Spur Hill, and Avenue F was found to be 2 to 3 degrees nearer magnetic north, only about 1 degree east of true north. Ave. G was parallel to A, B, C, D, E, but not to F between —I and —IV. Variation in the plan was noted in connection with street X. This street did not go to the east edge of the North Hill, as it should, but stopped at a point about half a block from it. From there Ave. D continued by a diagonal street northwest to Avenue C, which it entered north of street XI.¹ Streets XI and XII ended at Ave. C. It is evident that the city planners took into consideration the peculiarities of the terrain over which they laid their blocks. The work done in the valley and on the hills helped to define the city plan for nearly twice the area shown in the recent book, *Olynthus*, VIII, pl. 109 and in Pauly-Wissowa-Kroll, *RE.* s.v. *Olynthus*. In general in the new section the unit was also a block of ten houses, 300 Greek feet by 120, but in the villa section of the wealthier houses often the unit of 17 meters square was exceeded, or the villas had open spaces on two or more sides.

Trenches in the plain and beyond the east and south slopes of the East Spur Hill made it apparent that houses were built well down toward the bottom of the eastern valley, but not quite to the lowest part which served as a natural drain and which the modern inhabitants call "Langadi." That drain perhaps formed the eastern boundary of the town, which thus can be limited with some probability to the east and the west. The east limit lies at a short distance from the little chapel of St. Nicholas. The removal of that chapel revealed the remains of an interesting domical Basilica of the Byzantine type usual in the 11th century (fig. 1). The floor of its nave was covered with colored pebble mosaics of an intricate geometric and spiral pattern, while faint traces of painting and of icons could be distinguished on its walls. A Byzantine capital, four columns, parts of a decorated altar-screen, painted pillars, and the remains of its pendentives were found among the débris and on its floor.

¹ Cf. *Olynthus*, VIII, p. 26 and pl. 108, where the angle at the intersection of Ave. D and Street X needs changing.



FIG. 2. — WASH-BASIN OR URINAL



FIG. 1. — CHURCH OF BYZANTINE TYPE



FIG. 3. — "HOUSE OF MANY COLORS" AND OTHER HOUSES FROM THE NORTH

The southeastern slope of the East Spur Hill was particularly investigated during the present campaign. The remains of a much destroyed house were uncovered on the west side of Avenue F, which, however, made possible the definite location of that Avenue on the slope. Among the various articles found in the house was a complete hemispherical wash-basin or urinal with a long spout of a type known from previous finds at Olynthos¹ (fig. 2).

On the same slope and at the corner of Avenue G and street —I, a chance find of a piece of mosaic enabled us to locate a very interesting house. Architecturally it is one of the best that has so far been excavated (fig. 3). It has ten rooms, excluding the court, pastas, and prothyron. The house was entered from the east and by a prothyron paved with cobble-stones that led into a court similarly paved. To the south of the prothyron was cleared the store-room (the *πιθεῶν* or *ταμείον*), proved to be such by its contents, among which were fragments of at least four large pithoi. On one of these fragments the signs Π ||| = were inscribed,² indicating that the price of the pithos to which it belonged amounted to 53 drachmas and 2 obols. The floor level of the store-room was 0.90 m. below the level of the vestibule, so that one had to step down to it and could easily remain unnoticed by a woman descending from the upper story into the store-room's antechamber, as in Menander's play, *Samia*, lines 16–21. The court, open to the sky, was paved with cobble-stones with the exception of a small area in the middle of its west side, where the altar of the house was placed. A drain, made of terracotta pipes, was located at the east side of the court and was followed below the floor of the vestibule to the street beyond the entrance of the house. To the south of this court (fig. 4) was cleared a room, open to the north, and perhaps used in summer instead of an exedra. It has a mosaic floor, walls painted in blue, and a storage-pit (*apotheke*) at one end, 1.65 m. deep. Three column-bases were found across its open north side. On its complete mosaic floor were found pieces of another pebble mosaic which had apparently dropped from a second floor balcony. A stone pilaster capital was found on the north side of the pastas, into the top of which fit two unique iron dowels (one with the lead still surrounding it and the lead from the pour-channel still attached). They show that there must have been a low architrave of stone, since lead would hardly be poured into wood. They also show that the architrave was not set back from the edge of the capitals.

To the west of the court (fig. 4) and of the summer room we have a very important feature of this house of the first half of the fourth century B.C., a unit (so frequent at Olynthos) composed of a room with hearth, bath-room, and flue or kitchen.³ In *Olynthus*, VIII, pp. 185–188, the room with the hearth was often called

¹ Cf. *Olynthus*, VIII, pp. 205–206, pls. 54 and 55, 2. The bowl is rounded and tapers on the inside toward the spout. It is 0.42 m. wide, 0.34 m. from back to the spout, 0.20 m. high. The edges are 0.035 m. to 0.04 m. wide, the spout 0.50 m. long, which is a little more than the width of the wall through which it went to the alley. A similar long spout, rounded on top and flat on the bottom, was found in the House of Zoilus.

² These figures do not indicate the contents, as stated by Fraenkel, *Die Inschriften von Pergamon*, ii, pp. 500 f. and in Szalay and Boehringer, *Die Hellenistischen Arsenale*, 1937, nos. 30–34, pl. IV, 29, 33; pp. 37 ff. No. 31 has Π |||.

³ Cf. Robinson's article, "Haus," in Pauly-Wissowa-Kroll, *RE.*, Supplementband vii., pp. 258–260.



FIG. 4. — SOUTH HALF OF "HOUSE OF MANY COLORS"



FIG. 6. — VILLA OF THE TILED ENTRANCE

the kitchen, and the smaller room a "flue." The evidence obtained in this and other houses necessitates a change in this identification. In the middle of the floor of the small room a long pit was uncovered filled with ashes, bones, shells, pieces of cooking utensils and of lamps, proving that the flue was also a kitchen, as was stated to be the case in some houses.¹ The room which was called a kitchen was probably the oecus, with a hearth² made of four stones set on edge and measuring about 0.84 m. square.

Prothyron, vestibule, court, summer room, and oecus unit formed the southern half of the house. The northern half was occupied by the andron and its anteroom, the pastas, and two inner rooms. The east half of the andron (fig. 3) has been washed away, but enough remains to give us a complete plan of the room. It is located at the northeast corner of the house, has an almost square shape, and possesses the usual raised border 0.90 m. wide, around the central sunken mosaic floor. It was entered from the south and through an anteroom paved with cement, which in turn opened to the vestibule. To the west of the andron, was another large room with cement floor, painted yellow, except for the catch-basin in the southeast corner, which is red. Beyond this room to the west and occupying the northwest corner of the house was cleared a large room which was divided into two sections by pillars, and which perhaps served as a workroom. On its floor were found a pile of pebbles for making mosaics, a heap of whitish clay which was used to plaster the mud brick walls, a vase filled with lime cement, pieces of red and blue pigments, the vase which originally contained the red pigment, and a number of grinders. To the south of these two rooms was the long pastas so characteristic of Olynthian houses.

The walls of most of the rooms and of the pastas were covered with brilliantly colored stuccoes, so that we have called the structure the "House of Many Colors."³ The stucco which covered the walls of the andron had a base of yellow, divided by vertical incised lines, and above that a surbase or raised dado band of blue with moulded edges (0.15 m. wide) and a floral motive with palmettes. Above this projection the walls were red. Such a raised band of blue with bright yellow on one side and a rich burnt orange on the other was also found in another room (f.). The discovery of these examples of relief style will necessitate the revision of the statement made in *Olynthus*, VIII, p. 299, that "of this relief style there is absolutely no trace at Olynthus" and certainly of Wirth's⁴ belief that the transition from the incised to the relief styles occurred about the middle of the third century B.C. It began at Olynthus at least a century earlier. The room to the west of the andron has walls which are white at the base, separated by an incised line from the red plaster above. In the pastas above a white base (0.235 m. high) the red plaster is preserved to a height of 1.60 m. above the floor level of the west end, the greatest height of preservation so far found at Olynthus.⁴ In this pastas were found two painted marble

¹ Cf. *Olynthus*, VIII, pp. 88, 94, 194, etc. Two similar long pits have been found in the Athenian agora north of the Tholos, the kitchen for the diners there.

² Even if the heavier cooking was done in the long pit, other foods could be prepared at the hearth, which from early times was in the middle of the living room, and only later, as at Priene, removed to the forehall: *NJ.* xxv, 1910, p. 567; *Hesperia* ii, 1933, pp. 542 f., 636 f.; Nilsson, *Från Stenålder Till Rokoko*, 1937, pp. 43-48 ("Archaic Greek Temples with Fire-places in their Interior").

³ *AM.* lvi, 1931, p. 36.

⁴ Cf. *Olynthus*, VIII, p. 291, where the plaster of the Villa of Good Fortune is preserved to a height of 1.13 m.

altars (fig. 5), one with a unique bird with red eye, blue plumage, and golden-yellow wings. This is perhaps the *melissophagos*, the bee-eater; the ancient μέροψ,¹ often seen near Olynthos today. This bird was connected with the Olynthian patron god, Apollo.

Considerable information about the roof was found in the débris of this house. The roof construction was of the usual type with beams, reeds, and clay bedding, some of which was found burnt hard, with the impression of the reeds on it. Most of



FIG. 5.—PAINTED MARBLE ALTAR

it was covered with large flat pan tiles,² the joints of which were protected by cover-tiles. Another type of tile, peaked rather than rounded, was found in considerable numbers. Perhaps these were ridge tiles. Parts of rectangular tiles with an elliptical opening in the center protected by a raised lip³ were found in this and other houses, both at Olynthos and at Mekyberna, and a complete example, though broken in pieces, was recovered from House A VIII 8 (opening 0.49 m. by 0.23 m.). Such tiles were not found before, but the many pieces recovered this year prove that they were not uncommon. They must be the ὀπαια κεραμῖς, which could be covered by a board, or τηλία. Our experiments showed that through such an open tile a thin man could climb, as Philokleon in Aristophanes' *Wasps* (139–148) attempted to do. Lead slingstones with the names of Philip, Kleoboulos, and Hippo-nikos; terracottas, bronzes, vases, coins, etc., and abundant traces

of burning date the house before 348 B.C.

The next house in this block of four, which we call "Villa CC," was not sunk back into the hardpan as were the three other villas, but was set upon the solid stereo. Owing partly to the sloping level of the hill, however, it has been so destroyed by fire, the plough, and rains, and by theft of its stones that its plan is no longer clear

¹ Cf. D'Arcy Thompson, *Glossary of Greek Birds* (new ed.), pp. 201–203. It can hardly be the blue thrush (λαῖός) the modern πετροκόσσυφος (the Lesbian sparrow), also found in northern Greece, Thompson, *op. cit.* pp. 190–191.

² One complete flat tile is 0.56 m. by 0.46 m. by 0.03 m.

³ Cf. *Olynthus*, VIII, p. 195. A fragmentary one found this year is 0.02 m. thick and has a lip 0.07 m. high, but preserved only to a length of 0.40 m.

and need not detain us here. It yielded, however, interesting figurines and an important r.-f. skyphos with representations of the Eleusinian divinities, including the seated Triptolemos.

The "Villa of the Tiled Entrance" (fig. 6, p. 52), next to the south, is well preserved, as it was buried to a depth of two meters and was built into the stereo, as are modern houses on the slopes of Lykabettos in Athens. It provided interesting examples of the builders' ingenuity in using the stereo with which constructed walls very often merge. The plan of the Villa is typical and can easily be made out even in the illustration (fig. 6). Within its rooms was found an abundance of objects, among which are stone and terracotta altars, one in the form of an Ionic temple, three complete grain-mills,¹ with upper hollowed-out stone with a slit, a lower striated stone, several pedestals and a marble basin patched in antiquity many times with lead clamps, parts of the roof sima, a terracotta seal with a head of Dionysos, many vases and terracottas. An alley (2.65 m. wide) with a slope of nearly 18 degrees, paved with cobble-stones to slow down the flow of the water, separated this villa from the next to the south. Apparently it served as a drain, but it was also used by pedestrians.

The next villa to the south, the "Villa of the Twin Erotes" (so named by us from two terracotta figurines), is very interesting (fig. 3, p. 50). It has a cement or plaster coating on its exterior north face, 0.025 to 0.05 m. thick, and set to a depth of 0.14 to 0.17 m. in the center. This is the first instance of exterior lime plaster found at Olynthos and contradicts the statement in *Olynthus*, VIII, p. 226. Perhaps it was necessary here, as the northwest rooms of the villa are 0.55 m. to 0.75 m. below the edge of the alley. This villa was extended back into the stereo at the west beyond the line of the rear wall to get space and storage-room. The andron has an unfigured mosaic floor, bordered on four sides by the usual raised strip. At its east side, slightly to the south of the center, is a long, thin threshold block, opening into the colonnade which surrounds the peristyle court. At the southeast corner the andron is drained by a channel, which, by means of a lead pipe (the first found at Olynthos), carried the water through the mud-brick wall of the room to a cement basin placed at the extreme southwest end of the court. Apparently the lead pipe was used to prevent damage to the wall, which the drained water would produce. The subterranean storage-room (d) set back into the stereo, north of the andron (to be distinguished from the large *πιθεών* in the southeast corner of the House), had no walls except the natural stereo, which was coated with a thin light-colored gummy clay plaster, which probably hardened on exposure. It was perhaps under a stairway, of which we found the lowest stone step, which led to a terrace or second story. This villa has the usual kitchen, but with large schist stone slabs, one set on edge, and several fire-places. Next to the kitchen, as so often at Olynthos, is the bath-room, where parts of a terracotta tub, ending in a small Ionic column, were found. One of the main interests of this villa, aside from its plan and the cutting into the stereo at the west, is the dis-

¹ Cf. for the type, *Olynthus*, VIII, pp. 327-329. At Hagios Mamas is another such upper stone (built into the public fountain) and at Sunium half a one, not mentioned there. Add to our references *Antiquity* xi, 1937, pp. 133-151. The upper stone was called the donkey; cf. Xen. *Anab.* 1, 5, 5; Aristotle, *Prob.* 35, 3; Alexis, *Ampl.* 1, *Pyr.* 4. Cf. below, p. 76, fig. 43.



FIG. 7. — COMPLETE MUD BRICK



FIG. 8. — BRONZE RIM OF SHIELD



FIG. 9. — GUILLOCHE AND DOT PATTERN ON SHIELD

covery of many pieces of mud brick and even some complete specimens (one, fig. 7, measuring 0.39 m. by 0.095–0.12 m. by 0.19 m.).¹

The "Villa of the Bronze Shield," which was excavated about 24 m. south of the Villa of Good Fortune, its east wall in line with the east wall of the Villa of Good Fortune, is so named from the discovery of the perfectly preserved broad rim (άντυξ, 0.077 m. wide) of a shield (fig. 8), perhaps of Corinthian workmanship (with an inner diameter of 0.73 m.), found lying in a twisted position against the southwest corner of the second base from the east, on the south side of the pastas. Within this broad rim were found pieces of charred wood (0.06 m. wide), five small bronze rings, one with a hook attached, two bronze nails and two rounded bosses, and on the outside of the band an attachment for a strap or thong. The interior of the shield was made of crossing pieces of wood (πτύχες), probably covered in the center with hide. The rim (fig. 9) is decorated with one raised line near the outside, two near the inside, and in the center between these a pattern of raised dots in four rows, with three parallel lines of guilloche interwoven between them. Similar patterns have been found on shields recently discovered at Olympia,² in the Agora at Athens, also at Noicattaro near Tarentum in Italy, at Dodona, and on one from an arsenal at Pergamon, which had bronze over wood with papyrus filling. Nearby was found the bronze top (fig. 10) of a brazier (or possibly a big pan).

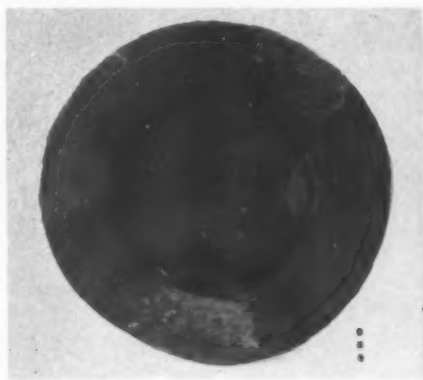


FIG. 10. — TOP OF BRONZE BRAZIER

The house (fig. 11) is well preserved, with about nine rooms exclusive of the pastas, court, and entrance. The south wall is a rather fine one for a private house. It averages 0.45 m. in width and has an outer facing of orthostate blocks cut from hard gray limestone in rustic technique,³ with an outside band of drafting ca. 0.04 m. in

¹ Cf. *Olynthus*, VIII, pp. 40, 49, 225, where the bricks have different measurements. Another mud brick found this year in the "Villa of Many Colors" was 0.22 m. broad, 0.08 m. thick, but preserved only to a length of 0.20 m. Another from the same villa was 0.22 m. broad, 0.095 m. thick, preserved only to a length of 0.28 m.

² Cf. *Olympia*, IV (Furtwängler, *Die Bronzen*), p. 109, no. 736 f., pp. 164–165, nos. 1008–1010, pls. XLIXa, LXII; *JdI*, lii, 1937, "Bericht über die Ausgrabungen in Olympia," p. 54, fig. 23 and pl. 16; *AJA*, xl, 1936, p. 189 (also part of an unpublished fifth-century shield from the Pnyx with guilloche and dot pattern); Gervasio, *Bronzi arcaici e ceramiche geometriche nel Museo di Bari*, 1921, pp. 117, 141–156, pl. XVI, 6; p. 118, fig. 59; *AM*, xli, 1916, pl. IV; Carapanos, *Dodone*, pl. XLIX, 20; Greger, *Schildformen und Schildschmuck bei den Griechen*, Erlangen diss., 1908, pp. 16–19; Lippold in *Münchener Archäologische Studien dem Andenken Furtwänglers*, 1909, pp. 442–488; *Altortümer von Pergamon*, x (Szalay und Boehringer, *Die Hellenistischen Arsenalen*, 1937), p. 33, pl. 27 f and g (bronze covering of a wooden shield); also on fourth-century and later Italic shields made after Greek models in Palermo, Florence, etc., Conestabile, *Pitt. Mur.* pl. 12, 7; also Schumacher, *Beschreibung der Sammlung Antiker Bronzen in Karlsruhe*, p. 136, no. 708, pl. XIII, 12. In the Museum at Delphi are two pieces of the rim of a bronze shield (0.07 m. wide), with a similar pattern of four rows of dots and guilloche. Another has only two rows of dots, another eight rows. There is also a fragment in the Sparta Museum.

³ Wrede, *Attische Mauern*, p. 61 says: "Die Rustikamauern . . . haben ihre eigene ἀκμή im 4. Jahrhundert . . . diese Bauweise im 4. Jahrhundert ihre eigene Blüte erreichte." At Olynthos the style reaches back into the fifth century and there are at Olynthos many examples long before 350 B.C.



FIG. 11. — HOUSE OF THE BRONZE SHIELD FROM NORTH. SMALL VILLA IN BACKGROUND



FIG. 12. — PEBBLE MOSAIC IN VILLA OF THE BRONZE SHIELD

width. One course of these without euthynteria is preserved east of the street doors. These blocks are about 0.45 m. high, 0.22 m. thick, and vary from 0.60 m. to 1.20 m. in length. West of the street doors there is a euthynteria course built of blocks ca. 0.25 m. high, 0.36 m. wide, and 0.90 m. to 1.00 m. long. These blocks vary in height above the street from 0.18 m. at the east to 0.04 m. at the west. This is occasioned by the fact that the street ascends gradually towards the west, following the contour of the slope, while the house level is kept practically constant. There are two blocks of the orthostate course preserved at the extreme west. They are set in 0.04 m. from the edge of the euthynteria. They are 0.46 m. high, 0.30 m. thick; the eastern one is 0.84 m. and the western (corner) one 0.98 m. in length. They are similarly drafted smooth at the edges and the corner one is also drafted on the narrow west face, thus forming the beginning of the west wall. Behind this orthostate course all along the south wall is a backing of rubble some 0.20 m. thick which is now tumbled down or completely lacking in some places. The west wall, also 0.45 m. wide, continues for the first 3.40 m. the same technique of euthynteria and orthostate backed by rubble.

The plan of the house is clearly marked out from the remains uncovered. Perhaps the most interesting part of the house is a double room occupying its northwest corner. This space is divided by a low wall into a smaller and a larger room; the former perhaps served as a workroom. The latter, 4.70 by 3.75 m. in dimensions, has walls covered with red stucco backed by thick white plaster on its north, east, and south walls. Its floor is covered with small pebbles set in cement, forming a patterned pebble mosaic in the central and southern sections. The mosaic (fig. 12) is made in the regular Olynthian technique with pebbles of white, blue-black, and green colors. Its outline and design, however, seem irregular and almost haphazard. At the north there is a very wide border of cement averaging 1.70 m. and this edge of the mosaic is fairly straight. At the east it is somewhat broken, but the edge is fairly clear and is so crooked that the width of the cement border varies from 0.35 m. at the north to 1.13 m. at the south. Along the south the edge comes almost against the wall and so is nearly straight, but at the west it is clear and curves so that the border is 0.35 m. wide at the south, 0.70 m. at the middle, and 0.26 m. at the north. The mosaic is complete on the west where its edge is outlined in white stone. On the north it is completely preserved in the western half, where there is a similar white line at the edge, but it is slightly broken in the eastern half. On the east the edge is outlined in white or black stones and is complete except for the north and possibly the south corner. On the south it is slightly broken except at the west where it is complete for 0.40 m. In the s.w. corner is a small triangular area divided into a light and dark section. The rest of the mosaic has a light background, in the center of which is a quadrated circle or wheel ca. 1.38 m. in diameter.¹ It is quadrated by two bands consisting of a double line of white pebbles with a single line of dark on either side. The northern two quarters are white, the southern two dark. Outside the wheel against the light background are designs, mostly triangles, in dark stones radiating from the circumference. The whole floor of room b slopes gently west and south towards the door 1.60 m. wide in the s.w. corner. Evidently this formed the natural

¹ This is the magic wheel of good fortune, which occurs in pebble mosaics only at Olynthos, but there at least six times. Cf. *AJA.* xxxvii, 1934, p. 505; *RM.* lii, 1937, pp. 190-192.

drain for the water out into the pastas. This doorway is clear both from the fact that the red plaster on the north wall breaks off sharply on either side and that the threshold was a good one, made of rubble foundation under a wooden sill. This wood was found carbonized, but *in situ* and so well preserved that it was possible to take fairly accurate measurements showing that it was ca. 0.07 m. high and 0.26 m. wide. This would provide a step of ca. 0.17 m. down to the pastas. Two identical bronze objects found just inside and a similar one found just outside this doorway would seem to have something to do with whatever provision was made here for a door. They are short, hooked at one end, and with a broad flat head at the other. It is hard to see what use three of them could have served in connection with a wooden door, while they would suit admirably to fasten a curtain to a small pole hung across the top of the doorway. Finds in this room include four bronze coins, three pilaster capitals, several complete and many fragmentary small black saucers, and two fine lamps, one double and one quadruple spouted,¹ both with a stem for a central handle.

The room in the northeast corner was perhaps the andron, with an anteroom opening west on the pastas, which had a fine stucco facing with the lower band (0.32 m. high) yellow, separated by an incised line from the upper red section. At the south of the pastas is a line of four pilaster bases (0.50 m. square) the two end ones engaged. The center intercolumniation is 1.50 m., the outer ones 1.68 m. wide. Two almost identical Doric capitals of the central columns, which may have been of wood, were found nearby (fig. 13). The abacus is 0.48 m. square and 0.08 m. thick, the echinus 0.475 m. in upper diameter, 0.40 m. in lower diameter, with a height of 0.05 m. and three rings on the neck. There are twenty flutings. The rectangular capital (0.45 m. by 0.35 m. on top by 0.19 m. high) of the westernmost engaged column was found. Thus the line of supports in the pastas was composed of two columns placed between two antae. In the northwest of the pastas was found a marble loutron of excellent material and workmanship, lying as it had fallen with the basin near the stand. The latter has a base 0.47 m. in diameter with a rim 0.05 m. high. The shaft has twenty flutes which are 0.06 m. wide at the bottom and narrow to 0.04 m. at the top. The top of the base has a lower band 0.06 m. wide with a rosette painted on either side. Above this is a narrow band 0.03 m. wide which slants inward and then a band of the same width which slants outward. On these bands in red paint are simple egg and dart patterns (fig. 14). The basin is 0.90 m. in outer diameter with a rim 0.04 m. wide. It has the usual square projection at the bottom center to fit into a hole of similar dimensions in the top of the stand. Both the bottom of the basin and the top of the stand have a large alpha inscribed on them. This may be intended as a guide to the setting of the one on the other, or it may indicate the maker.

The southeast corner of the house was occupied by the usual "oecus unit" of three rooms. There is the large oecus unit and at the south of this a bath-room, with yellow plaster and a cement floor, in which is set a terracotta bath-tub (1.13 m. long, 0.68 m. wide, 0.42 m. high). Nearby was a basin for warming the water. To the west of the bath-room is a room separated from the oecus by three small stone bases, with no sign of the usual rubble foundation between them. A door in its west wall

¹ Cf. *ILN*. Nov. 5, 1938, p. 850, fig. 28.



FIG. 13. — DORIC CAPITAL FROM THE VILLA OF THE BRONZE SHIELD



FIG. 14. — MARBLE PAINTED PEDESTAL WITH BASE

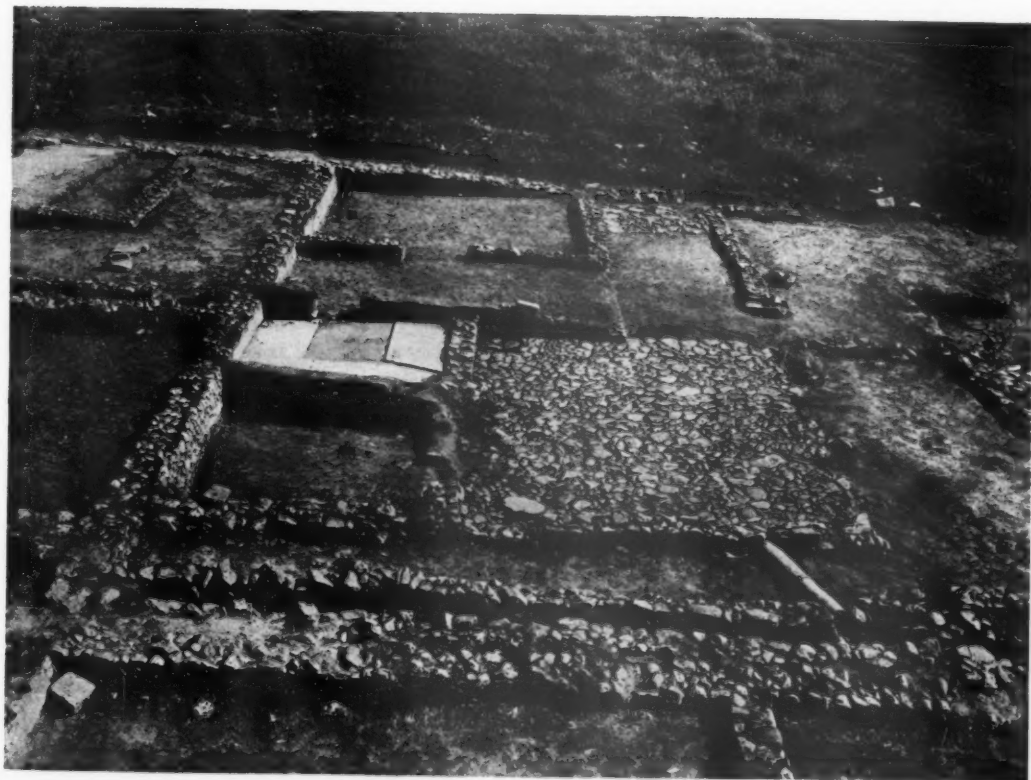


FIG. 15. — HOUSE B VI 7 FROM SOUTH

leads into the court, so that the room may not have been a flue, especially as it has on its south wall red stucco, applied without the usual backing of plaster, directly on the stone. It certainly was at least a kitchen, as besides the black ashes from the conflagration of 348 B.C. were found a uniform layer of gray ashes (0.03 m. deep) and clear signs of cooking debris including bones of animals.

In the court south of the bases were found fragments of roof-tiles of a distinctive shape and material. They are made of a coarse brownish-yellow, cement-like clay and have a very smooth yellow outer surface. The flat tiles are 0.53 m. wide, 0.06 m. thick, with a flaring profile at the outer edge and of uncertain length. They have grooves in their under sides for the rafters of the roof. The cover-tiles are gabled on the inside, but on the outside they are more sharply gabled with vertical edges at the sides. They measure 0.60 m. in length, 0.205 m. in width, and 0.08 m. from the peak of the gable to the bottom. The one complete cover-tile has one end filled in and this end probably extended out to the edge of the roof. Doubtless these tiles only covered the edge of the pastas roof, where they would be much in evidence and very effective. The rest of the roof-tiles of the house seem to have been of the usual type.

Some twelve slingstones of lead were found in the house, one with ΟΑΥ (= Ὀλυνθίου) on one side and Σωσίω on the other, possibly the name of the owner of the house. Sosios, or whoever the owner was, must have been a warrior and hunter, as besides the shield and slingstones we found two spear heads, four arrow heads, two large knives, a big bronze brazier top and a sword blade. Bones of wild animals were frequent. The skull of a calf or other small animal was also found here.

South of the "Villa of the Bronze Shield," facing on Street — V, was excavated another less pretentious villa (fig. 11, p. 58) of somewhat similar plan (but some 4 meters larger than the usual 17 m.) with four rooms north of the pastas and the usual unit of oecus, bath-room, and kitchen in the southeast corner. To the west of this unit was uncovered a room with cobbles, which may have been used as a stable. In this "South Villa" were found many terracottas, including female masks of archaic type, a plastic vase in the form of a Pan's head, part of an iron lock, many coins and nails.

There is not space to speak in detail of the 25 houses excavated in Block B VI, Block A VIII, and Block A IV. A few points, however, may be noted. Much of Block B VI was built on a decided slope and shows ingenuity on the part of the architect. The last houses at the northeast corner of this block (B VI 9 and B VI 10) have a regular interior plan, but because of the drop in level the eastern part was completely shut off by a high supporting wall and divided into non-communicating shops,¹ cut down slightly into the stereo and with slightly differing floor levels. Each had a separate door (1.48–1.60 m. wide) into Ave. C, where the east wall was 0.42 m. thick. South of the door of the northern shop there is a course of cut stone (0.08 m. thick) on which the rubble was built, leaving a slight projection of nicely cut stones marked by a setting line ca. 0.03 m. from the outer edge. In house B VI 9, room j, was found a hoard of thirty-five beautiful bronze coins (all Chalcidic or Bottiaean, except one of Lamia) and a fine silver fingerring. In house B VI 10 and in its court

¹ Shops are not common at Olynthos, but cf. for three on the east side of a house A IV 9, *Olynthus*, VIII, pp. 85 ff., pls. 23, 92, 93.

the rectangular base of a pillar was found *in situ*, constructed partly in stone and partly in fired brick.¹ It was covered with a whitish plaster, so that the joints of the stone and brick parts were concealed and protected. Fragments of another base similarly constructed were found in the filling to the east of the court. These remains prove that the Olynthians understood the value of burnt brick and that they used it occasionally, especially where a great deal of direct weight was to be supported, although they seem never to have used it in wall construction.²

B VI 7 is an important house (fig. 15). In the well preserved northwest corner room (a) the plaster on the walls has a base of yellow 0.21 m. high, separated by a horizontal incised line, a surbase of yellow, 0.11 m. high, then not separated by an incised line but projecting, the red upper section. Each of the lower bands is also divided into sections by vertical incised lines.³ But the surbase is not incised vertically above the center of the divisions in the base-board as in A VI 7 and the Villa of Good Fortune.⁴ It is irregular as in the early Villa of the Comedian. Also of interest in this room (a) is the fact that we have a second coating of stucco on the north wall, a repair of yellow over red. The next room south (d) was decorated on the same principle of baseboard and surbase of yellow below the red of the upper wall. Here the divisions in the surbase are still different, 0.415 m. from the southwest corner and on the north wall 0.33 m. from the northwest corner, then 0.845 m. The south wall of this room had a wall of mud-brick, 0.43 m. thick, with a doorway into a small andron (4.80 m. from east to west, 3.65 m. from north to south), with a drain through the pavement and wall at the southeast corner. Near the west side of the doorway was lying the beautiful original fourth-century statuette of Asklepios seen in fig. 16. B VI 5



FIG. 16. — MARBLE STATUETTE OF
ASKLEPIOS

¹ Cf. *ILN*, Nov. 5, 1938, p. 846, fig. 3.

² In Berlin, in the Museum für Vor- und Frühgeschichte, are three large rectangular adobe bricks from Schliemann's excavations at Troy. Nos. 9415 and 9416 are 0.585 m. by 0.385 m. by 0.12 high. Cf. Schmidt, *Schliemanns Sammlung Trojanischer Altertümer*, p. 309. They were burnt red by the conflagration which destroyed Troy, but in the Olynthos house there are no signs of conflagration and it seems that the base, of which half is of stone, was filled out originally with burnt brick.

³ From the southwest corner toward the north the baseboard is 0.365+0.87 m.+0.995+0.995+0.92, the surbase 0.75 m., then three divisions of 0.995 m. each. From the southwest corner toward the east the base is 1.05+0.86 m. to the door. Then the vertical incised lines of the surbase are here destroyed. These measurements help in determining the standard of foot used at Olynthos, cf. *Olynthus*, VIII, pp. 45-51, 295, 303.

⁴ Cf. *Olynthus*, VIII, p. 297.

is of interest because of a cistern faced with cement with an oval opening (0.70 m. in diameter) on one side and because of its well preserved andron in the northwest corner of the house. The border is 0.90 m. wide as usual, and the central sunk area is 3.10 m. square. The andron was drained in its southeast corner through a hole in the wall into a stone basin (0.465 m. by 0.18 m. by 0.22 m. deep). This house has also the unit of bath-room, kitchen (2.17 m. by 2.90 m.) and oecus.

The excavation of the area to the west of the Public Fountain and Stoa revealed in the campaign of 1934 brought to light (including A IV 9 excavated in 1934) five houses forming the northern half of Block A IV (fig. 17) and confirmed the conjecture that there were no houses in the southern section of this block.¹ Instead in this southern half were revealed two very wide walls running parallel to each other at a distance of 12 m. and from east to west. At the west end of the area limited by these walls three column-bases were found *in situ* and in beds cut in the stereo. Unfortunately, owing to the scanty filling of the area, no other details of the possible structure to which these bases belonged could be obtained. It is clear, however, that both the walls and the bases must have been part of a public structure that stood on that part of the hill. What that structure was and what purpose it served is difficult if not impossible to determine. Perhaps it served as an arsenal, such as was discovered recently at Pergamon² or as stables from which troops could sally forth for manoeuvres or for battle. The area to the south of this structure is proved to have been free from structures, an open area for military manoeuvres, as has already been conjectured, from which cavalry and troops could gather momentum as they descended the steep slope through the western entrance between the south and the north hills of the city.³ The finding of an inscription in the alley south of A IV 3 would seem to confirm the idea that this section belonged to the city, because it says that a certain man obtained a house which Pheidippos, son of Pheidon, had bought from the city of the Olynthians (τῆς πόλεως τῆς Ὀλυνθίων) for 4500 drachmas. Also the fact that the houses in the section west and north and northeast of the open area yielded the most coins shows perhaps that these houses were nearer the agora and did more trading.⁴

One or two features only can be mentioned for Block A VIII (fig. 18). The ten houses there excavated conformed to the usual type but with many variations and interesting features. A VIII 2 has four rooms on the north side, a pastas with a room at either end and four column bases on the south, which is the north side of a large cobble-stone court. A peculiarity is a terracotta pipe-line⁵ which starts from the alley at the north outside room c and goes through room d at the east, making a beautiful, well preserved elbow, and after passing through the south wall of this room, crosses obliquely the pastas and enters the court between the two east-

¹ Cf. *Olynthus*, VIII, p. 21 and pl. 109. Also *ILN*, Nov. 5, 1938, p. 848, fig. 13.

² Cf. *Altortümer von Pergamon*, x, Szalay and Boehringer, *Die Hellenistischen Arsenale*, 1937.

³ For the usefulness of such a mustering place for Olynthos' famous cavalry cf. West, *History of the Chalcidic League*, p. 161.

⁴ Cf. *Olynthus*, VIII (*The Hellenic House*), pp. 349-350. A 11 had 92 coins, A 12 had 73, A 13 had 60, A V 41 had 41 and A IV 9 had 96 coins. A IV 1 had 12 or more coins. In A IV 7 we found this year eleven unstruck flans as if this were a business house with the right to strike coins.

⁵ The pipes are 0.95-0.98 m. long, inner diameter 0.128 m., thickness 0.033 m.



FIG. 17. — HOUSE A IV 7 FROM SOUTH



FIG. 18. — A VIII 5 AND A VIII 6 FROM NORTH

ernmost column-bases. No cistern was found at the south where it could empty, but perhaps it has been destroyed. A VIII 4 varies somewhat from the plan of A VIII 2, especially on the south where there is a porter's room with an entrance on either side. That to the east has a well preserved jamb-block and a stone threshold showing marks of the smaller doorway (0.80 m. wide) for those on foot, and a larger double doorway for carts or chariots (2 m. wide). Outside in street VIII at either end of the door are two large blocks to protect the doorway from the chariot wheels. Another interesting feature of this house is that it has in the northeast corner (fig. 18) next to the alley one of the largest bath-rooms of Olynthus, covered with cement (2.25 m. by 2.15 m.) sloping toward a round deep basin in the southeast corner (0.48 m. in diameter, 0.30 m. deep). The room was at a lower level than that of the adjoining room and entered by two steps. It could be shut off by a door, as indicated by a cutting (0.22 by 0.10 m.) at the north end of the interior step. The bath-tub of the usual Olynthian type is still in place in the northwest corner (0.98 m. interior length, 0.57 extreme width, lower basin 0.33 m. in diameter, 0.20 m. deep). A VIII 6 (fig. 18) is of the prothyron type and has a rather small court, but the pastas is very wide (5.80 m.) and has along its long axis and at its center a row of four pillar-bases forming a large stoa. On the north of the pastas are the usual three rooms. In the northwest corner is the *pitheon* or storage-room, in the middle of the south side the room of the concierge, and to the east of this a unique large prothyron (3.80 by 1.85 m.), with a low row of tiles at the side, which may have served the purpose of a latrine. Especially peculiar is a long large room (16.20 by 5.00 m.) running the entire width of the eastern part of the house from street VIII to the alley.¹ This large room, occupying about a third of the house, was probably unroofed and used for animals.

A VIII 8 is one of the best preserved houses in the block. It is of regular size and plan but presents many interesting architectural arrangements. It has on the south a recessed entrance with a special spur wall at the west. The court was paved with pebbles set in cement and had on either side an engaged pilaster and farther to the north two columns of which the bases and Doric capitals were found between engaged half columns. In the southwest corner is a large workroom with a stone trough with two openings (0.62 m. by 0.34 m. and 0.14 m. by 0.34 m. respectively). Near it was found a stone mortar (fig. 18) in two sections² (0.60 m. high, upper opening 0.41 m. in inner diameter). The pastas, which had a blue baseboard and red upper walls, goes the entire length of the house and is wider at the east than at the west. In its northwest corner is a unique built-in rectangular altar (0.63 m. long, 0.48 m. wide, 0.40 m. high). It projects 0.56 m. from the line of the wall, and is constructed of stucco, with convex and straight mouldings at top and bottom. In the southwest corner we have a unit which is a unique variation of the usual three-room unit in Olynthian architecture, a small room (i) next to a larger one (j) and in front of both a long hall (h) not separated from j, which was the kitchen, to judge by the ashes and household debris found there. It had a pavement of cobble-stones and certainly a roof, as we found among its debris many roof-tiles. A VIII 10 is also an important house but instead of the usual pastas it has two large rooms, the western

¹ Cf. for such areas the entire width of a house in the adjoining blocks A VII and A VI to the south, *Olynthus*, VIII, pp. 111, 118, 124, pl. 97 (A VI 8 a), pl. 99 (A VII 3 and A VII 8 h, the last similar in plan to A VIII 6).

² Cf. *Olynthus*, VIII, pp. 208, 335 f., pl. 79, 8-9.

one divided into two sections. It would almost seem as if the architect had divided the house into six rectangular sections with two rooms in the northeast part, and a small cobble-stone court in the southwestern portion. We have not space to discuss the houses of the northern half of Block A VIII in detail except to say that an inscription gives us the name of the owner of A VIII 3 as Bacchon.

We may finally mention a house facing street V which was entirely cleared during the uncovering of the north side of that street across the valley of the North Hill. It possessed as many as seventeen small rooms, at least two or more of which were used as workrooms. In the entrance of this house an inscription was found cut in the regular Olynthian fashion on limestone, giving the name of the owner of the house as Zoilus, son of Philocrates, and the sale price as 1200 drachmas (¥88). We can now surmise, on the basis of the remains of this house and on the strength of the record, what kind of structure one could buy with the amount indicated.

The South Hill was also investigated by means of several trial trenches, which brought to light as a rule foundations of simple and primitive-looking houses. In one room of these houses sixty-two loomweights (20 with designs) were found heaped in one corner. In another room a bath-tub was cleared, while from another was obtained a terracotta figurine representing a comic actor¹ shown weeping, holding a blue cloak to his eyes with his right hand (fig. 19). But perhaps the most interesting find from this hill was a classical grave of a child, discovered among the walls of houses. The south side was made by an upright tile (1.08 m. long) while its north and other sides were marked by irregular rows of stones. The grave was 0.54 m. in length, 0.35 m. in width, and 0.38 m. deep. No cover was found and only part of the skull at its east end. With the bones, however, and within the grave were found a seated female figurine, a small black-figured hydria decorated with palmettes, and thirteen astragali. This unique burial of a child between dwellings could perhaps be attributed to the necessity of interring the corpse during some time of catastrophe, when there was no time or when they could not safely remove it to the cemetery. Of course it is known that early in the historic period and at Athens children were so buried,² but as far as we know no such burials are known from the fourth century and especially no other such burials were found at Olynthos.

Work in the cemeteries of Olynthos was resumed and two more cemeteries were discovered along the west slope of the North Hill, west of streets IX and V, but the contents were meager and showed that only poorer persons had been buried here. Several more were opened in the Riverside Cemetery and the skulls studied by our anthropologist, John Lawrence Angel. We quote from his report: "In one the complete skeleton of a small ancient horse like those of the Parthenon frieze was found. The human skulls show wide variation in type, ranging from the narrow variety of classic Mediterranean to the strong type of Mediterranean-Alpine hybrid, which is mesocephalic. The average Olynthian probably had a medium head, not very high, with a low wide face and wide unimpressive nose and a strong jaw. His teeth were good and he lived to no great old age. There is nothing Dinaric or Nordic, but a mixture of Mediterranean breeds with Alpine and Anatolian strains. The males are

¹ There is an identical actor in the Metropolitan Museum of Art (30.11. 13).

² Ps. Plato, *Minos*, 315.



FIG. 19. - TERRACOTTA HEAD AND ACTOR

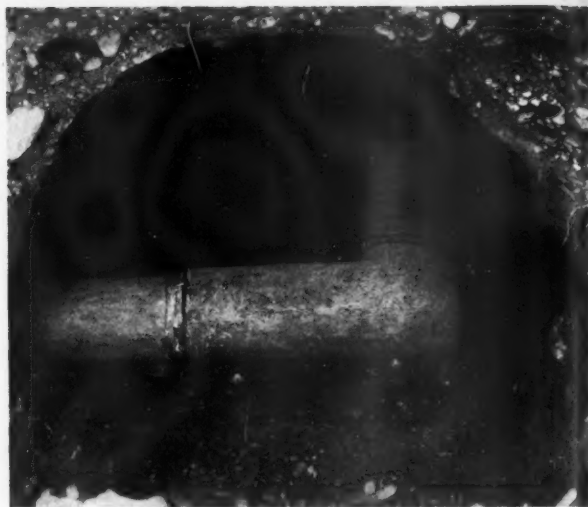


FIG. 20. - TURN OF AQUEDUCT IN TUNNEL



FIG. 21. - BYZANTINE
PILLAR



FIG. 22. - ARCHAIC FEMALE HEAD



FIG. 23. - TERRACOTTA MASK OF FIFTH CENTURY B.C.

fairly tall, the females almost short. Such sexual dimorphism in size is a clear index of a hybrid group. The males perhaps have the stature of invaders, while the females have the original stature of the Mediterranean population."

The aqueduct located in the excavations of 1934 was investigated this year. It was found to run under Avenue A to its entire length. At street VIII we found it at a depth of only 4.50 m. At street XI near the north gate we dug down six meters before we struck the terracotta pipes (about 0.90 m. long, cemented at the joints, diam. 0.21, th. 0.053 m.), laid in a tunnel with rounded top 1.56 m. high and 1.16 m. broad.¹ There were shafts every 45 m. for airing and cleaning. Similar pipes were found in the plain and at two places about 1 mile to the north of the Olynthian hill and in the hills below Polygyros, more than eight miles to the north. The water was evidently brought from a distance of eight to ten miles to the north over an uneven plain. This is one of the best preserved and most important Greek aqueducts of the fifth and fourth centuries B.C. The elbow, where the aqueduct turns from Avenue A toward the Public Fountain, is a marvel of hydraulic engineering (fig. 20). It is solidly constructed to resist the pressure of the water and to turn it to the east.²

At Mekyberna, the port of Olynthos, more trenches were dug, locating many walls, and one good small house of three rooms was completely cleared. Traces of houses were also found on the hills to the west of that previously excavated, showing that more than one hill was settled at Mekyberna and that Mekyberna was inhabited even in Hellenistic times. Here many of those who escaped from Philip took refuge at the time of the destruction of Olynthos in 348 B.C. Mekyberna, of course, is at some distance from Olynthos, but it possessed a double harbor, above which were the hills nearest to Olynthos which could protect it; to the west and in the direction of Olynthos the land is low and marshy. Furthermore, the site of Mekyberna is in a straight line from the middle of the entrance of the bay between Skione and Terone, nearer to the eastern shores of that bay and therefore at the most convenient point to sailors entering the bay. Hence it was used by the Olynthians, although at a good distance from their town. Its double harbor was protected by low lines of cut stones, still visible under the water in some places 10 m. wide.

At Hagios Mamas, south of Olynthos, where we hoped to find a Hellenistic city, trial trenches were dug on the hill of St. George and also near the shrine of St. Demetrios. Byzantine walls and pottery were unearthed and one very fine pillar (fig. 21) decorated with reliefs, representing on panels a lion or panther, a bull, an elephant, a griffin, a Pegasus, and a centaur.

The movable objects found among these houses and now exhibited in the Museum at Thessalonika are varied and numerous, and can be listed with only a very brief comment. The inscriptions, including several discovered outside the excavations in explorations in Macedonia, will be considered in a separate article. They include another Corinthian inscription, a treaty with Grabos, king of Illyria (357 B.C.), several sales inscriptions, giving the prices of houses as 900, 1200, 2000, and 4500

¹ Cf. for similar but later tunnels *A.A.* li, 1936, p. 174, fig. 23; *A.J.A.* xlii, 1938, p. 366, fig. 4.

² Inner diameter 0.164 m., thickness of inner circle 0.015 m., of inner circle and middle 0.043 m., total thickness of end of elbow 0.053 m. Diameter of inside of middle circle 0.21 m., total thickness of pipe 0.055 m., total diameter of pipe 0.28 m. For Public Fountain cf. *A.J.A.* xxxix, 1935, pp. 219-220.



FIG. 19. —TERRACOTTA HEAD AND ACTOR



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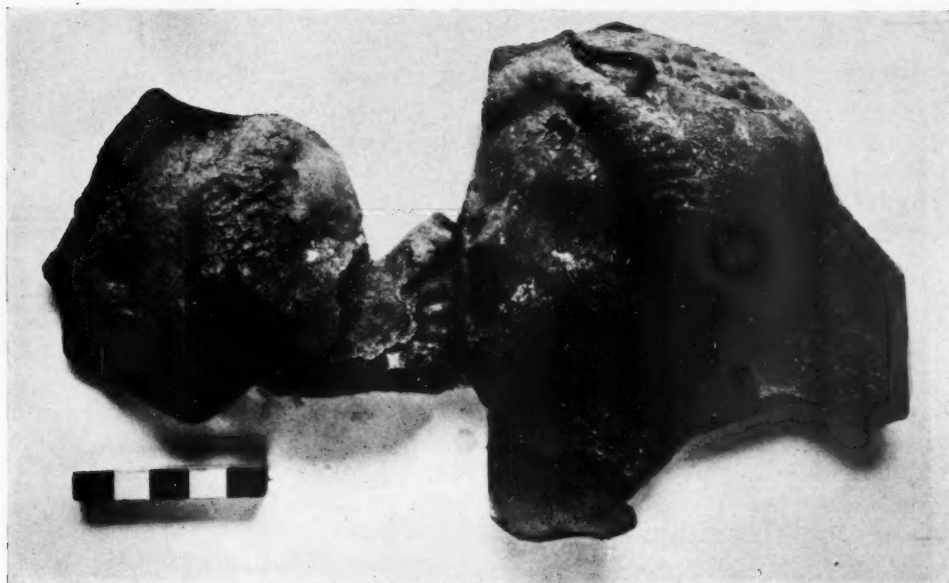


FIG. 24. — PLAQUE WITH KISSING PAIR



FIG. 25. — MOTHER NURSING CHILD



FIG. 26. — RUNNING MEDUSA

drachmas. One gives us the first epigraphical evidence that we have found about Olynthos and that while the official name was Χαλκιδέων the unofficial name was ἡ πόλις ἡ Ὀλυνθίων. In one of the houses, strange to say, was found a bronze Athenian palimpsest dicast's ticket of the fourth century B.C., for section E with the name Ἀριστοφῶν Τιμάν(δρου) Φλυεύς. The terracottas found in the houses included masks of the archaic female type (figs. 22-23), a plaque of two kissing faces¹ (fig. 24), fifth-century seated female figures of many types including a mother nursing her child (kourotrophos, fig. 25), a beautiful painted small terracotta relief of a running Medusa like one in the Louvre (fig. 26),² figurines of the best Greek style (figs. 27-28), moulds of a flute-playing Silenus and others, a boy playing with his dog (fig. 29), comic Sileni³ and actors. There were found 598 vases (figs. 30-33) including religious vases (kernoi) with rings (fig. 34), such as occur at Eleusis, a skyphos with a seated Triptolemos and other Eleusinian divinities with torches, cistae, and scepters, fish-plates (fig. 35) and six large craters of the fourth century with Dionysiac and banquet scenes. There were many plain vases of many shapes and many fine stamped plates (fig. 36). One unique aryballos (fig. 37) is painted at the back, but on the front has in relief a boy who takes refuge with a woman and another woman in good fifth-century pose at the right, Orestes (Courby, p. 291) running from the Furies to Electra, or Astyanax, taking refuge with Andromache (Paus. X, 25, 9). Perhaps Itys flees to Philomela, while Prokne, like Medea in Roman paintings, contemplates slaying her own child; or possibly the women are Aëdon and Chelidon (*NS*, xi, 1914, p. 139, fig. 4). A vase (guttus) of the fourth century has a relief of a reclining woman petting a horse's head.⁴ Many plastic vases were found, such as those in the form of a head of Dionysos or Pan (fig. 38), or a drunken comic actor leaning on a comic herm, and especially a vase (fig. 39) in the form of a group consisting of a boy with his arms around a girl's neck and a third boy at the right.⁵ All these show that such vases date long before Hellenistic times. Fifty-seven lamps of many types were found, some with loop-handles on a central stem (fig. 40), some with four spouts,⁶ one with the upper part of a female figure holding the handles on top of the lamp, an interesting type to have before 348 B.C.

Some 335 bronzes were found, vase-handles, strigils, round bosses for doors, re-

¹ The Olynthian example is the earliest of this type. Cf. the later silver cup with a boy's face and a girl's face with lips touching in Willeumier, *Le Trésor de Tarente*, 1930, pls. III and IV; Courby, *Les Vases grecs à reliefs*, pp. 234, 235, fig. 39, pl. VIII b (from Delos). Cf. also *JdI*, xx, 1905, p. 166; *AJA*, xxxviii, 1934, pl. XXV A; Derevitzky, Pavlowsky, von Stern, *Das Museum der Odessaer Gea*, ii, pl. II, 3, 1.

² Cf. Jacobsthal, *Die Melischen Reliefs*, pp. 89-90, pl. 66 a; also Berlin 8257 from Peiraeus; Pace, *Arte e Civiltà della Sicilia Antica*, pp. 25, 280, pl. V.

³ Cf. *ILN*, Nov. 5, 1938, p. 847, fig. 9.

⁴ Cf. *ILN*, Nov. 5, 1938, p. 847, fig. 5.

⁵ In Thessalonika in the Archaeological Museum is a somewhat similar relief vase of similar clay from Niaousta, with a loving couple. Cf. for the type, *Ausgewählte griechischen Terrakotten in Antiquarium zu Berlin*, pl. XXXI a; Winter, *Die Typen der figürlichen Terrakotten*, II, 224, 4; Brueckner, *Anakalypteria (74tes Programm zum Winckelmannsfeste, 1904)*, pls. I, II, pp. 1-8 (an aryballos from Apollonia in Thrace, two later identical lekythoi with marriage scenes, perhaps gifts to the newlywed). Neugebauer, *Fuehrer, Die Vasen*, Berlin, p. 136 (3249) rightly dates the aryballos in the last third of the fifth century B.C., the date of our Olynthian vase. Cf. also similar vases in Munich, 7642 and 756-9 (876), *AA*, xlv, 1929, p. 23, no. 62; Scheurleer, *Grieksche Ceramiek*, p. 152; Courby, *op. cit.*, pp. 134-142, pl. V. Cf. especially the late relief-lekythos 2174 in the Nat. Mus. at Athens.

⁶ Cf. *ILN*, Nov. 5, 1938, p. 850, fig. 28.



FIG. 27. — FIGURINE OF FIFTH
CENTURY B.C.



FIG. 29. — BOY PLAYING WITH DOG



FIG. 28. — FIGURINE OF FOURTH
CENTURY B.C.



FIG. 30. — SMALL RED-FIGURED LEKYTHOS



FIG. 31. — VASE OF FOURTH CENTURY B.C.

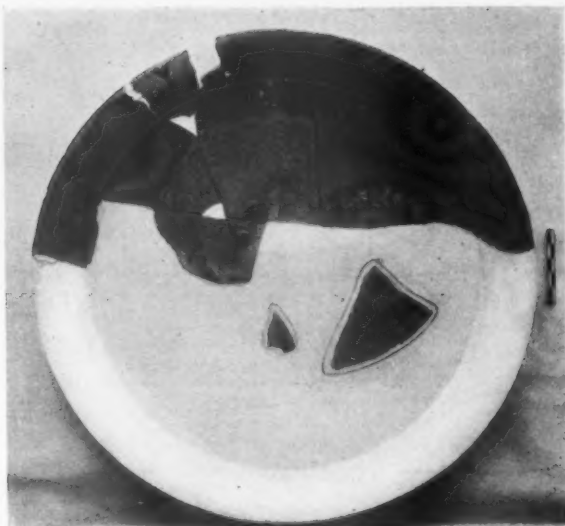


FIG. 32. — RED-FIGURED PLATE WITH FEMALE HEAD, FOURTH CENTURY B.C.



FIG. 33. — RIM OF VASE WITH RELIEFS REPRESENTING LOBSTERS AND OCTOPUS



FIG. 34. — A KERNOS

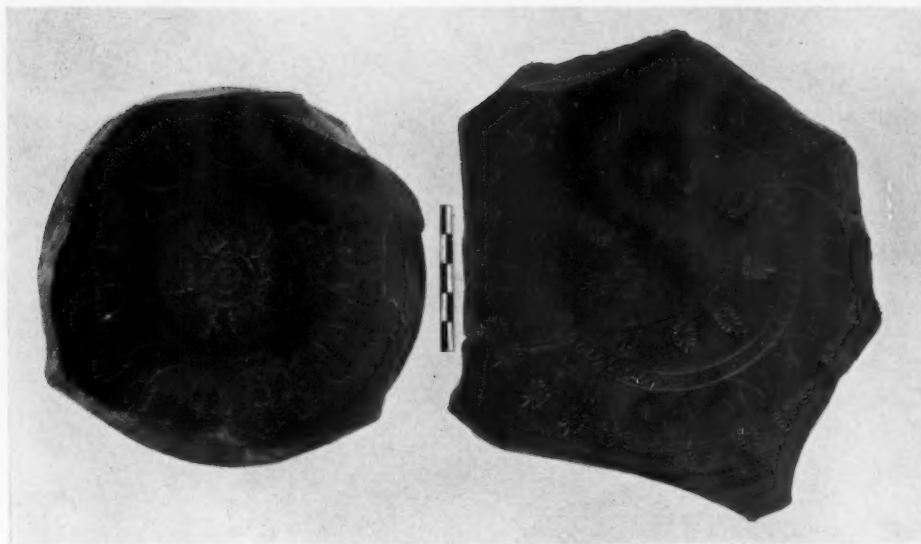


FIG. 36. — STAMPED PLATES



FIG. 37. — ARYBALLOS WITH RELIEFS



FIG. 38. — PLASTIC VASE IN FORM OF PAN'S HEAD



FIG. 35. — FISH PLATE, FOURTH CENTURY



FIG. 39. — PLASTIC VASE



FIG. 40. — LAMPS



FIG. 41. — ALTAR WITH COCK



FIG. 42. — TERRACOTTA PEDESTAL AND BASIN

inforcements for key-holes, keys, knives, swords, arrow- and spear-heads, sieves, cheese-graters, etc. 472 terracotta loomweights were found, many with graffiti or beautiful designs (245 miscellaneous objects), a small lead Priapus and his wife on the same base.¹ Our inventories catalogue 95 architectural pieces, including capitals, tiles, altars (fig. 41), terracotta basins (one [fig. 42] complete, 0.745 m. high, 0.855 m. upper diameter of basin) and marble pedestals with basins above. One marble pedestal (fig. 14) has a painted rosette design as well as egg and dart. There are many grain-mills (fig. 43), bath-tubs, latrine-vessels, and other household equip-

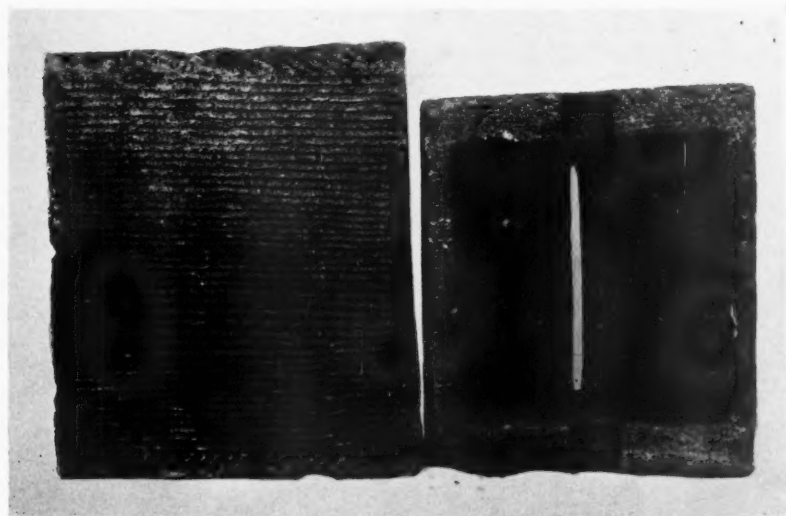


FIG. 43.—LOWER AND UPPER PARTS OF MILL

ment. The only important piece of sculpture is the marble statuette of Asklepios (fig. 16, p. 63), found in house B VI 7. He is leaning against a staff with a serpent and rests his right hand on his hip. He is nude above the waist, an excellent original of the fourth century B.C. of a well known type found also at Kilgis and Potidaea. But the Olynthian figure is simpler and earlier than the usual type, which is Hellenistic.²

Six hundred and thirty-five coins in all were found. Most came from the houses, as many as fifty-nine from one house (A IV 5), but a good number from graves;

¹ Cf. *Olynthus*, II, p. 34 and *AJA.* xxxix, 1935, p. 233; Lullies, *Die Typen der griechischen Herme*, p. 55. Even on the Persae vase (*FR.* pl. 88) there is a female herm, but ours is the earliest. Cf. also *JdI.* lii, 1937, p. 55.

² Cf. for later adaptations Bluemel, *Roemische Kopien Griechischer Skulpturen des vierten Jahrhunderts v. Chr.*, 1938, K. 211, pl. 25; Neugebauer, *Asklepios* (78tes Winckelmannsprogramm 1921); *Nat. Mus. Athens*, 267, 268; Munich 10.146, 10.084; *AJA.* xl, 1936, p. 197, fig. 17; Arndt-Lippold, *Einzelaufnahmen Antiker Skulpturen*, 4487, pp. 42-43 (torso of statuette in Gallatin coll. in New York). Lippold, *RM.* xxxii, 1917, pp. 95 ff. and *Kopien*, pp. 14, 120, 200 f., thinks rightly that the differences in the mantle on the shoulders or upper arm and the use of overfolds do not mean different originals but are variations introduced into the original type (which we now have in the Olynthian statuette) by the different copyists in Hellenistic times. The type, however, is earlier and Hellenic and did not start in Alexandria or even Kos.

sometimes one or four coins were found in the mouths of skeletons. Only 20 silver coins were found (Chalcidic [8], Perdikkas II [3], Akanthos [1], Argos [1], Thebes [1], Skione [1], Trieres [3], Mende [1], Terone [1]). The other coins were bronze. Some of the Chalcidic and Bottiaean specimens are beautiful. The coins are mostly Chalcidic (313), or Bottiaean (56), but there are coins from Abydos (1), Akanthos (6), Amphipolis (19), Aphytis (5), Athens (1), Corinth (1), Eretria (1), Ephesus (1), Kerkyra (1), Lamia (2), Larisa (5), Mende (5), Myrina (1), Neapolis (1), Olynthos (1), Olophyxos (2), Peparethos (4), Potidaia (12), Pydna (2), Samos (4), Skione (17), new type from Skapsa (obv. with head of Apollo, rev. lion crouching to right), Sikyon (2), Terone (9), Thasos (1), Thasos on the mainland (6), Tragilos (1). There are also coins from kings Airopos (1), Pausanias (3), Amyntas III (17), Perdikkas III (8), Philip II (16), Alexander III (12, all from Mekyberna), several indistinguishable ones, a hoard of 35 bronze coins from House B VI 9 (Lamia [1], Bottiaea [17], Chalcidic [17]), and a hoard of eleven unstruck flans from House A IV 7.

THE JOHNS HOPKINS UNIVERSITY
GEORGE WASHINGTON UNIVERSITY

DAVID M. ROBINSON
GEORGE E. MYLONAS

WATCHTOWERS AND FORTRESSES IN ARGOLIS

PLATES I-VIII

ABOUT two kilometers from the great fountain at Kephalaria, on the road toward Tegea, rises a unique structure which has aroused interest among classical travelers for many years. It is a ruined pyramid, built of polygonal stones. In all Greece there are only two pyramids. This is much the better preserved. The earliest traveler of modern times to notice it was Leake.¹ He distinguished two chambers in the interior and regarded it as a tomb of some illustrious Argive or some Argive family.² Later, Ross described it, considering it a polyandrium, raised to the memory of the Argives who fell at Hysiae.³ Curtius, on the other hand, believed it could not be a tomb and regarded it as a signal tower (φρυκτώριον).⁴ Vischer was inclined to believe it a grave, remarking that a fort without windows would be rather useless.⁵ W. C. Clark also followed this view, holding that a fortress with walls sloping inward, from which defenders had no view from either windows or slits, would be a poor refuge in time of storm.⁶ Blouet gave a good drawing of the interior, but did not commit himself as to the purpose of the structure.⁷ Donaldson considered it a signal tower,⁸ as did Tsountas,⁹ and Wiegand agreed with this view, at least affirming that it could not be a tomb.¹⁰

Recent excavations, which I conducted during the summer of 1937, confirm the findings of Wiegand in so far as they prove that the pyramid was never used for burial purposes. A tomb does not have a door opening inward and secured with a bar inside. Such precautions are not necessary. It seems equally clear that the structure could never have been used as a fortress in the ordinary meaning of that term, for its sloping walls invite attack and the lack of any aperture for spears or slits for arrows shows that it could not have been successfully defended from serious assault.

The pyramidal character of this structure and the one near Ligurio presents a very interesting problem. To connect these pyramids with Egyptian influence in Argos is a very fascinating hypothesis. The story of the flight of the fifty daughters of King Danaus from the fifty sons of King Aegyptus¹¹ suggests such a connection.¹²

¹ *Morea*, ii, p. 344.

² *Peloponnesiaca*, p. 251.

³ L. Ross, *Reisen und Reiserouten durch Griechenland*, pp. 142-145.

⁴ *Peloponnesiaca*, ii, p. 365.

⁵ *Erinnerungen*, pp. 325-328.

⁶ W. C. Clark, *Peloponnesus*, pp. 98-100.

⁷ *Expédition scientifique de Morée*, ii, pl. 55.

⁸ Donaldson, *Supplement to Stuart and Revett's Athens*, p. 23.

⁹ Tsountas-Manatt, *The Mycenaean Age*, p. 39. He regards the fortresses near Phychthia as watch-towers guarding the approach from Phlius and Cleonae to Argos. He dates their polygonal walls in the 6th century.

¹⁰ *AM.* xxvi, 1901, p. 241, note, p. 245. The statement is made that the sloping walls appear on the acropolis at Chaeronea, in the walls of Selinunte and in a tower of Sulla's time in Florence.

¹¹ Apollodorus 2, 1, 5 ff.

¹² J. L. Myres, *Who Were the Greeks?*, pp. 120 ff. Manetho makes Danaus a ruler of Egypt after Amenhotep IV, during the period of anarchy. He was expelled by his brother Aegyptus and driven back to Argos, whence the family had come two generations before. Danaus may represent a band of mercenary marauders. The Greek date for the arrival of Danaus at Argos corresponds with the first

Danaus, in his flight, landed at Pyramia in Argolis.¹ Further, there are, I believe, no pyramids in Greece except these two, both of them in Argolis. There was supposed to be a third pyramid at Astros.² Careful investigation has, however, failed to locate any such structure. Vischer claimed there was another pyramid in southern Laconia,³ but no other observer, so far as I know, has seen such a structure. Astros, while not in Argolis, was at one time a possession of Argos, and lies close to its southern border. Further, there was found among the excavation finds at Mycenae a diminutive statue of a monkey, on the base of which is the seal of Amenhotep III (1411–1375 B.C.). Myres notes that such objects as this, showing an early connection with Egypt, appear only in Cyprus, Rhodes, Crete and Mycenae.⁴ The excavations at the Argive Heraeum also show Egyptian objects, but probably nothing earlier than the time of Amasis in the twenty-sixth dynasty (663–525 B.C.).⁵ The temptation to find a remote connection between these pyramids and the pyramids of Egypt is a very strong one. Facts disclosed by the excavations, however, do not seem to support any such attractive hypothesis.⁶

mention of Danaan marauders in the correspondence of Amenhotep III. The dynasty of Danaus ruled until superseded by Atreus. Cf. Myres, *op. cit.*, ch. VI, pp. 323 ff.

¹ Plutarch, *Pyrrhus*, 32.

² Vischer, *op. cit.*, p. 327.

³ *Op. cit.*, p. 327.

⁴ Myres, *op. cit.*, p. 120.

⁵ *Excavations at the Argive Heraeum*, i, p. 64.

⁶ The pyramidal form seems to be extremely rare in Greece. The two pyramids discussed in this article are the only two pyramidal structures of any size so far as I know. At Megara, there was a statue of Apollo Carinus in the form of a pyramid (Paus. 1, 44, 2). On the coins of Megara an obelisk (not a pyramid) appears between two dolphins (Gardner, *Numismatic Commentary on Paus.*, p. 6 and pl. A. VIII). Here again the connection with Egypt might be emphasized, for Lelex had come from Egypt to be King at Megara in the twelfth generation after Car, from whom the image of Apollo Carinus was named (Paus. 1, 39, 6). At Sicyon, there was an image of Zeus that resembled a pyramid (Paus. 2, 9, 6), but no such representation of Zeus is known in ancient art, except the columns mentioned later at Tegea. Stepped pyramids appear in the Lion Tomb at Cnidus (Gardner, *Sculptured Tombs of Hellas*, p. 224, fig. 77); at the Mausoleum at Halicarnassus; on a tomb at Mylasa; on a tomb that has now disappeared near Delphi (Dodwell, *Views of Cyclopean Remains*, p. 20), and probably on the Lion Monument recently discovered at Amphipolis. The Solonian Laws in the Stoa Basileios were inscribed on a pillar with a pyramidal top (A. B. Cook, *Zeus*, ii, p. 1094). Beside these, there are eighteen short pillars (the tallest is sixty-seven centimeters), each surmounted by a pyramid (pl. VIII A), in the Museum at Tegea (Rhomaïos, *Ep.* 1911, pp. 149–159). Ten of these are inscribed, of which eight are illustrated in Kern's *Insc. Graec.*, p. 11. There are, besides these, a considerable number of small cones and pyramids, many of which are in the museum at Athens (Dumont, *Inscriptiones Céramiques de Grèce*, p. 405). One was recently found in the excavation of the Athenian Agora. They are usually about eighteen centimeters in height; the base, about two centimeters square. Their purpose has been variously interpreted: playthings, metrological records, plumb weights, decorations for fish plates, and that last resort of the harassed archaeologist—loom weights. A few of them are inscribed ΓΑΥΚ or ΓΑΥΚΥ which seems to suggest that they had some connection with food, but probably not fish. On two Etruscan sepulchral urns in the Museum at Florence, depicting the assassination of Clytemnestra by Orestes, appear pillars, in one case, of pyramidal shape (pl. VIII B), and in the other, pillars surmounted by pyramids (pl. VIII C). Here again is a suggestion which might connect the pyramids of Argos with early legend. Frazer (on Paus. 5, 318) gives a list of five gods worshipped in pyramidal form: Apollo at Megara, Zeus at Sicyon, Apollo as a street god in the form of a conical pillar, Aphrodite at Paphos in Cyprus, the Thymbrian Apollo. De Visser, *Die nichtmenschengestaltigen Götter der Griechen*, p. 74, also lists four gods in pyramidal form: Apollo of Megara (p. 61), Zeus of Sicyon (p. 72), Zeus of Mallos in Cilicia (p. 65) and Aphrodite of Uranopolis in Chalcidice (p. 74). There is also a pyramid on the reverse of a coin of Eusebia (p. 144 N. 2). A. B. Cook (*Zeus*, I, p. 603) says the significance of the pyramid as a cult object is uncertain. Jastrow (*Aspects of Religious Belief and Practice in Babylonia and Assyria*, p. 282) thinks the pyramid represented a mountain, the dwelling place of a divinity. For a list of pyramids in Italy, see *Zeus*, ii, p. 249.

These pyramids of Kephalaria and Ligurio were both mentioned by Pausanias, who believed them to be tombs. Excavation has clearly shown that this is not the case. The purpose for which they were used must be interpreted in the light of other similar structures near Argos.

There are within a very few miles of Argos a number of structures, the location of which, except the first, is indicated on the sketch map of a portion of Argolis (pl. I). First, there are fragmentary foundations of a building, probably square, on the modern road that leads from Argos to Tripolis, just before the road rises to cross the mountains that separate Argolis from Arcadia, at the right of the road, about four kilometers from Lerna. While only a few stones remain, it is clear that it was of polygonal construction, similar in plan to other buildings discussed in this article. One point worthy of notice is the fact that the structure lies low in the plain, with absolutely no outlook.

Second, there is the pyramid near Kephalaria, which stands on a low foothill of Mount Chaon (pl. II A). It commands an outlook toward the Gulf of Nauplia (pl. II B) and also along the road toward Tegea. Its position, however, is not high enough to warrant its use for purposes of observation.

Third, about a kilometer below this pyramid, nearer the course of the road from Argos to Tegea, lie the foundations of another square structure, with a ground plan about the size of the pyramid. Its position is even less commanding than that of the pyramid above it. It is a polygonal structure. The stones are large and it antedates the pyramid.

Fourth, near the station at Mycenae, just beside the railroad track, a square structure of polygonal masonry appears. Its dimensions are almost identically those of the pyramid (pl. III A). Its position commands no view of the surrounding country.

Fifth, to the west of Phychthia, there is a ruined fortress of considerable dimensions. It consists of two enclosures, one about seven meters square (pl. III B), and the other, about twenty meters square. The masonry of this is also polygonal. It too lies in the plain.

Sixth, there is the almost perfectly preserved structure which lies to the west of the modern road between Mycenae and Nemea station (pl. III C), at the head of a low valley. This structure is identical in size with the pyramid. It lies on the old road between Mycenae and Nemea and it is within a few kilometers of the water-shed between Nemea and Mycenae. It has an extended view down its own valley toward Mycenae, but no wide panorama is visible from it.

Seventh, above the railroad station of Nemea, at the very top of the pass, there is the base of a round tower (pl. IV A), twelve meters in diameter (fig. 1). This tower has a remarkable outlook, for it is possible from it to see Acrocorinth to the north and the Gulf of Nauplia to the south. It commands approaches from all directions.

Eighth, Midea is a Mycenaean site, south of the Argive Heraeum. It stands on a very considerable elevation on the left of the road from Argos to Epidaurus. It is an actual fortress, capable of defense by a considerable number of soldiers.

Ninth, behind Tiryns and northeast of Katzingri¹ lie the remains of another large

¹ Karo, *AM.* xl, 1915, pp. 106 ff.

fortress. Its ground plan is not at all to be confused with that of the ground plan of the structures mentioned earlier. It has an external wall with a gate near the southwest corner (pl. IV B). Within the fortification is a cistern for the storage of water, and inside the encircling wall is a keep, nine by nine and three-tenths meters.

Tenth, north of the modern road leading from Nauplia to Epidauros lies the well known fortress of Kasarma. This, also, is a complete fortress, with a cistern for storing water for the garrison. The ancient road lay north of the modern road. One of its bridges is still intact (pl. IV C). East of the bridge this road continued, passing west of the fortress and joining the direct ancient road from Argos to Epidauros (see map). A branch of this road also led up the south slope of the hill to the fortress of Kasarma.

Eleventh, three and a quarter kilometers farther on, also north of the road, lies another fortress, Kastraki (pl. V A), probably to be identified with Pausanias' Lessa. All four of these fortresses, Kasarma, Katzingri, Kastraki, and Midea, are built of polygonal masonry, uniform in style. They are, in general, allowing for the topographical requirements, the same in plan.

Twelfth, four and a quarter kilometers west of Ligurio, north of the road from Nauplia, there are the foundations of a second round tower. Only the foundations are left, but in diameter it corresponds exactly to the round tower above Nemea station. A considerable outlook both toward Epidauros and westward toward Argos and Nauplia, can be obtained from this site.

Thirteenth, there are remains of a pyramid near Ligurio, north of the road, near the Chapel of Hagia Marina. This pyramid commanded no view in any direction. It lies flat on the plain.

It is quite clear that we have here three different types of military structures. First, the complete fortress represented by Midea, Katzingri, Kasarma, Kastraki and the somewhat smaller fortress at Phychthia. Second, the watchtower, represented by the almost identical round structures above the station of Nemea and on the road toward Ligurio. And third, six small redoubts of the type of the pyramid at

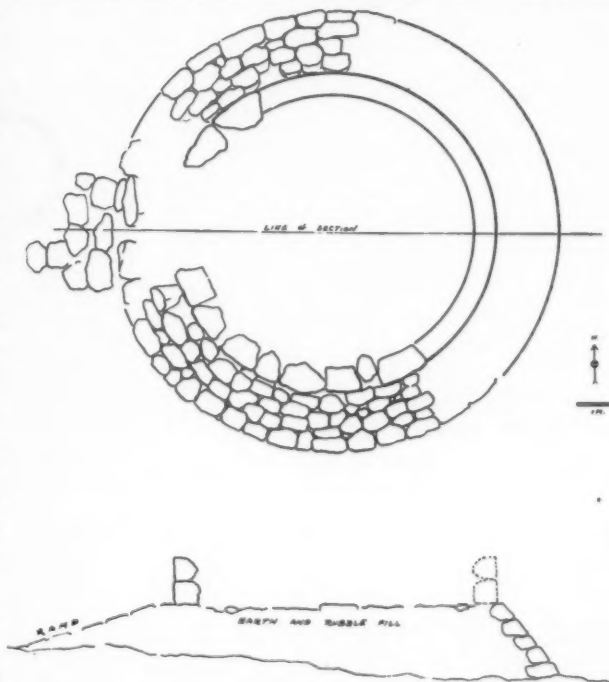


FIG. 1.—SKETCH PLAN OF ROUND TOWER ABOVE NEMEA STATION

Kephalaria and the blockhouse between Mycenae and Nemea. Three of these have been completely investigated.¹ The ground plan is identical (pl. V B), an entrance built in the regular fortification style, exposing the right side of the attacker to the javelins of the defender. The interior, in every case, is a square divided into four rooms. In all three cases, provision is made for a limited water-supply. There are no arrow-slits. There could have been no second story, nor was a brick wall superimposed on the lower walls. The walls at the top, in the two cases where they exist, are of almost identical thickness: 1.25 meters. In no case are these structures located in a position to command a wide outlook. They are not watchtowers or signal towers.



FIG. 2.—LOWER MILLSTONE AT PYRAMID NEAR LIGURIO



FIG. 3.—UPPER MILLSTONE AT STRUCTURE BY MYCENAE STATION

The other three structures (the one on the road to Tegea, the lower structure at Kephalaria, and the one at Mycenae station) are all, so far as can be judged, about the same size as the three which were investigated. Their interior plans might be determined by slight excavation.

Further, in the case of four of these structures, there were found remains of ancient millstones. At Kephalaria, a small piece of the lower millstone still remains within the building. Two lower millstones are preserved, almost intact,—one, of magnificent size,² at the blockhouse toward Nemea, a smaller one at the pyramid near Ligurio (fig. 2). At Mycenae station, it is the upper millstone which has been preserved (fig. 3). All these stones are made of a rough, porous material which, because of its hard but uneven surface, makes an ideal grinding instrument. (Volcanic trachyte—or porous lava—is the material commonly used at Pompeii and in other Roman mills.)

All of these six structures lie along the ancient roads; in fact, they are so placed as to control these roads. Because, then, these structures cannot be points of observation, because they were apparently used by small garrisons, who, at least, possibly ground their own grain, because in the three structures excavated provision was made for a water-supply, and because they are built in the regular fortress style with

¹ *Hesperia* vii, 1938.

² Diameter of stone 1.89 meters; boss in center, diameter .63 meters; hole in boss, 9 cm. wide, 2 cm. deep; diameter of rim, 28 cm.; depth of bowl, 29 cm.

protected entrances, they must have been constructed to house small garrisons which could patrol the neighboring country, camp safely and permanently within and protect themselves from desultory attacks. The purpose of these structures, therefore, must have been to accommodate detachments of soldiers who could police the country and perhaps levy toll on traffic passing along the roads which they controlled.

Several distinct types of polygonal masonry may be distinguished in these structures. At Kasarma the polygonal work is quite primitive (pl. VI A). The stones used in the construction of the bridge below the fortress show scarcely any trace of cutting. The wall itself is laid roughly in courses and the stones are cut, but they are small and many of them are pentagonal. No stones are cut in elaborate patterns to fit them to considerable irregularities in adjoining stones. Mycenaean pottery is reported from this site. The same style of wall-construction is used at Kastraki and the same similarity is seen in the gates of the two fortresses, a point at which the walls are always most carefully built (pl. VI B).

The same general type of rough polygonal work appears at the two watchtowers above Nemea station and on the road to Ligurio.

Early work of another type appears in the three structures at Mycenae station on the road to Tegea and the small building near the pyramid at Kephalaria. There large blocks are used, but, so far as can be determined from the somewhat scanty remains, they were not closely fitted (pl. III A). The workmanship is distinctly inferior to that displayed in the blockhouse toward Nemea. The polygonal work in this resembles that in the large structure west of Phychthia, except that the material—a good limestone—used in the latter makes for better joints than can be produced in the conglomerate of which the blockhouse is built (pl. VI C). The blockhouse in turn is inferior to the masonry work at Katzingri, as is shown by the treatment of the corners (see pl. VI D) and still better by a comparison of the doorways (pl. VII A. Cf. with pl. IV B).

The most advanced polygonal work is to be seen in the pyramids. Here the joints are made with great accuracy and show a great variety of unions (pl. VII B). The pyramidal structure also requires that the blocks be dressed on the outer side.

Pottery and a coin of Epidauros found during the excavation of 1937 indicate that the pyramids and the blockhouse near Nemea were fourth century constructions. This date is confirmed by the character of the polygonal masonry. Conglomerate, moreover, was not employed as a building material for walls till that period.

The temporal sequence of these structures as indicated by the evidence of the walls would be:

(1) The fortresses of Midea, Kasarma, and Kastraki. Mycenaean sherds have been found in the first two, and these three structures are Mycenaean foundations, though later work also appears.

(2) The watchtowers near Ligurio and above Nemea Station. These also are early structures. In my opinion they were signal towers (φρυκτώρια), used in the Mycenaean system of fortification.

(3) The structures at (1) Mycenae station, (2) on the road to Tegea, and (3) near the pyramid at Kephalaria. These are not watchtowers, but patrol stations. Their

date cannot be determined definitely without further excavation, but I am inclined to believe them contemporary with the fortresses of Midea and Kasarma and the watchtowers mentioned above. They supplement and complete that system of fortification.

- (4) The blockhouse toward Nemea and the fortress at Phychthia, fourth century.
- (5) The fortress at Katzingri, fourth century.
- (6) The pyramids at Kephalaria and Ligurio, fourth century.

LOUIS E. LORD

OBERLIN COLLEGE

THE PRIMITIVE SMELTING OF IRON

THE most useful metal known to man is iron, and as a steel alloy it is the most efficient of material substances. The ores of this metal exist in quantity so large and in distribution so wide as to be available all over the world. The delay, therefore, in the discovery of a method for extracting iron from its many ores is a significant fact in human history. According to the available evidence, the first smelting of iron took place about 1400 B.C., and the cradle of the art was in the Near East, possibly in the Hittite highlands of Asia Minor.

The Parian chronicle, a slab of marble inscribed in 263 B.C., found on the island of Paros and now in the Ashmolean Museum at Oxford, gives an approximate date for the first smelting of iron. On this stone are recorded sundry events in Greek history from 1582 to 354 B.C., and among them is a reference to the discovery of iron. Item No. 11 reads thus: "From the time when Minos the elder was King of Crete, and built Apollonia, and iron was discovered in Ida, the discoverers being the Idaean Dactyls, Kelmios and Damnameneos, in the reign of Pandion of Athens." This Athenian king reigned from 1462 to 1423 B.C. The Mount Ida mentioned is in Phrygia. The destruction of Troy is dated on the marble as the equivalent of 1209 B.C., or about 230 years later than the discovery of iron.¹ As it is known that the Trojan war ended ca. 1184 B.C., if we add 230 years, we get 1414 as the date for the first smelting of iron. Such a date is in accord with that of the iron furnaces and iron tools discovered in 1927 by Sir Flinders Petrie at Gerar, in Palestine.² He found contemporaneous scarabs and amulets of Egyptian origin, which enabled him to fix a date about 1350 B.C.

In Homer's day it would appear that iron was not yet the trusted material for weapons of war. The metal was indeed available, but the use of it was restricted. Stores of "smithied iron" were possessed, so it is said, by Dolon, Adrastus, and the sons of Antimachos. Achilles boasted of the "fair-girdled women and gray iron" in his possession. I quote the prose translation of the *Iliad*, because the phrasing is not under compulsion to the exigencies of verse.³ The heroes of the Trojan war are represented as using weapons of *chalkos*, which is usually translated as "bronze," although most of the tools that were used in the making of these weapons were of iron. Apparently the shaping of iron weapons and the sharpening of them were ill understood, so that rural implements were made of iron, whereas the warriors were loath to trust their lives to the dubious metal. Such was Andrew Lang's opinion,⁴ and he seems to be fully justified, for, at that time, supposing Homer to be expressing the ideas prevalent in his own day, the fabrication even of copper weapons had not reached practical efficiency.

The most interesting mention of any metal in the *Iliad* is that of the unwrought or self-fused mass of iron that Achilles offered as a prize in the games to celebrate the funeral of his friend Patroklos.⁵ It would suffice, said Achilles, for the needs of a

¹ Felix Jacoby, *Das Marmor Parium*, 1904, p. 6.

² Sir Flinders Petrie, *Gerar*, 1928, p. 14.

³ Andrew Lang, Walter Leaf, and Ernest Myers, *The Iliad of Homer*, 1929.

⁴ Andrew Lang, *The World of Homer*, 1910, p. 96.

⁵ *Iliad*, xxiii, 826.

farmer, in the form of implements, during five years. Σόλος αὐτοχόωνος is the Greek phrase, which the translators render as "unwrought metal mass." This is an interesting literary error, because it is noteworthy that Homer had no generic word for the various metals. Murray says that it was "a mass of rough-cast iron." Does the hyphen save him from a dreadful anachronism? Iron was not "cast," or completely melted, in Greek lands until two thousand years subsequently. A few lines later the mass is described as σίδηρος, so that we know it was iron. This lump of iron was thrown in an athletic contest resembling "putting the shot," and therefore must have weighed about 15 pounds. Probably it was a small meteorite. We are told nothing about it except that it was a mass which anciently the mighty Eëtion was wont to whirl, and by slaying him Achilles got possession of the strange piece of metal.

Opinions differ as to the difficulty of reducing iron ore to the metallic state; indeed, it has been assumed that primitive man should have had no trouble in smelting iron soon after he had learned how to smelt copper. Such ideas are based upon a mistaken estimate of the intelligence of primitive man and a failure to appreciate the difficulties inseparable from the smelting of iron. The idea that it was "easy" for primitive man to reduce an iron ore is a supposition without warrant either in archaeology or metallurgy. As Déchelette remarked truly, the reduction of iron from its ore was "une opération laborieuse et pénible" to the ancients.¹ When iron ore was first reduced accidentally, the product would not be recognizable as metal; it would be a dark spongy or sintery mass, which to primitive man would seem to have nothing in common with the white and the red metals that he had learned to extract from their respective ores. The lump of partly reduced iron would be disregarded. Remnants of unreduced ore would render it non-malleable, and therefore useless. Such a metallurgic abortion would be thrown aside, until, eventually, also by accident, something more like metal was forthcoming, when, by a happy chance, the temperature of the fire sufficed to cause an agglomeration of the metal into a coherent lump, and it happened also to be protected from the rapid oxidation consequent upon a free access of air. The restricted use of iron in the days of Homer suggests that the iron smelted at that time was still of inferior quality, and probably of haphazard composition, particularly as regards the proportion and distribution of its most critical constituent, the carbon.

Humboldt expressed surprise that the Aztecs had not been led to the discovery of iron by the accidental mixture of some combustible substance with the iron pigments, red and yellow ochres, so common in Mexico.² The iron ochres, which are the minerals limonite, goethite, and haematite, could be a source of metal if smelted in a hot charcoal fire within a closed vessel, but, as has been suggested previously, the accidental product from such a reduction in the open air would be so strange as to be unrecognizable as metal to the early metallurgist and so imperfect as to be of no use to the primitive artificer.

The discovery of iron, that is, of the art whereby its ores could be reduced to metal, may have followed from the finding of a patch of rich iron oxide in the outcrop of a copper lode and the inadvertent smelting of such iron oxide, possibly because it had

¹ Joseph Déchelette, *Manuel d'archéologie préhistorique*, ii, 1910, p. 541.

² Alexander von Humboldt, *Essai politique sur la royauté de la Nouvelle Espagne*, ii, 1811, p. 304.

something of the weight and color of tin ore. Specular haematite, a shiny ore, might have provoked a trial because it was somewhat like galena, the sulphide of lead, in its lustrous quality. A patch of gray magnetite, the richest of iron ores, might attract curiosity on account of its heft, but this probably would not happen until the pioneer metallurgist had ascertained that iron occurred in nature in manifold guise. It is probable that iron smelting had to wait for the use of efficient bellows, consequent upon the development of copper-smelting practice, whereby a sufficient, controllable blast became available.

Iron in sponge form, such as was smelted by the ancients, is what nowadays we term "wrought iron," in distinction from "cast iron." The two differ in their carbon content, which affects not only their qualities as metal but their fusibility also. Wrought iron is devoid of carbon, and it becomes cast iron when the carbon content reaches two and one-half per cent. The latter is smelted at a temperature of about 850° C., whereas the other requires a temperature of about 1150° C. It must be remembered, however, that the wrought iron produced by direct smelting from ore, as done by the primitive founder, is different from the wrought iron made today by the puddling process, in which pig iron is decarburized to the composition of the sponge iron of the ancients.

The difference of temperature at which sponge iron and cast iron respectively are smelted is not large enough to explain the long delay in discovering how to produce iron that would run into a mould, as was done with other metals in antiquity. So long as only wrought iron, that is to say, malleable iron, free from carbon, was the objective of the smelting operation, it was impossible to obtain entire fusibility except at a temperature usually beyond the scope of the primitive furnace, for pure iron is not completely melted until a temperature of 1530° C. is attained. A sufficient addition, say four per cent, of carbon will make a metal that can be cast into shape, that is, completely fused, at 1130° C. Our ancient artificer did not want such iron, and if he made any inadvertently, as necessarily he must have done occasionally, he rejected it as a metallurgic abortion unfit for his purpose. Wrought iron was so called because it could be worked, or hammered, into shape; today cast iron can be cut with a steel tool, actuated by machinery, almost as easily as wood was shaped by the artisans of the dawn. It remains a curious fact in the history of metallurgy that the casting of iron intentionally was postponed so long, for if, when meaning to produce sponge iron, it happened fortuitously that the heat and the absorption of carbon caused a more fusible metal to be produced and to flow out of the furnace on the floor or ground, and to reproduce its contours or inequalities, as in a mould, it would seem that the idea of casting iron would have come to an intelligent observer.

The epithet "wrought" is significant, for such iron necessitated laborious hammering to close the pores and to remove the foreign matter, slag and clinker, that was embedded in it. The Homeric word *polykmētos*,¹ or much-belabored, is deeply suggestive of the patient technique required to convert crude iron into a serviceable metal. "Cast" originally meant to throw and then to form into shape. The casting of other metals, by melting, was known long before iron was run into a mould. In

¹ *Iliad*, iv, 40; x, 379; xi, 133: and *Odyssey*, xiv, 324.

western Europe the first cast iron was made about 1400 A.D.,¹ but the art of casting was known in China long before. In the Field Museum at Chicago the visitor can see objects of cast iron of the late Han dynasty,² belonging to the period 25 to 220 A.D. These exhibits were collected by Berthold Laufer in 1908. It is difficult to understand why the knowledge of casting iron should not have filtered into Europe, and that it should have had to be discovered independently twelve hundred years later. Numerous missions and embassies came and went from China to Europe during this interval.

The primitive people of Elba mined and used copper long before they made use of iron, although ores of the latter were more plentiful on the island than those of copper. The Greek historian Diodorus, writing in about 25 B.C., says that Aethalia (the island of Elba) abounds in ironstone; "this the natives dig and cut out of the ground to melt, in order to make iron, much of which metal is in this sort of stone. The workmen employed first cut the stones in pieces, and then melt them in furnaces built and prepared for the purpose. In these furnaces the stones, by the violent heat of the fire, are melted into several lumps, in form like great sponges, which the merchants buy for truck and exchange for other wares."³ These spongy lumps, he adds, are bought by "the smiths, who beat and fashion them into all sorts of tools." Such was the practice of primitive man everywhere, as we shall see.

Most descriptions of iron-smelting by backward peoples as witnessed by modern Europeans are incorrect in their details, because the observer rarely happens to be versed in metallurgy. Kolben's description, for example, of the smelting of iron by the Hottentots is preposterous.⁴ However, from the variant accounts of travelers we can form a fairly good idea of such crude practices as must likewise have been in vogue among the more primitive peoples of the past.

The smelting-hearth is usually a hole in the ground or a pot made of some fire-resisting clay, such as that of the so-called ant-hills. A blast is provided either by human breath or by bellows. The Basuto smiths reduce the iron ore in a circular fireplace, on which it is placed in a heap, together with a much larger quantity of hot embers; from the centre of the hearth extend, like spokes, a number of pipes made of baked clay. These are sufficiently long to allow the stalwart apprentices, without undue inconvenience, to blow with all their lung power into the ore and fuel. As soon as the iron has been reduced and has agglomerated, it is withdrawn from the hearth and hammered vigorously; it is then again exposed to the fire, so as to remove extraneous matter. Next comes more hammering, in spite of which, however, the natives complain that their iron is often mixed with earth and ashes.⁵ Although these Negroes have learned thus to forge iron, they still use hammers and anvils made of stone. "The anvil is merely a large mass of basalt or granite," says Casalis; "the hammer to beat the iron is a conical stone, held in both hands." In this operation bellows are used; they consist of two long narrow bags of hide, each ending in a horn tube.

¹ T. A. Rickard, *Man and Metals*, ii, 1932, p. 885.

² Berthold Laufer, "The Beginnings of Porcelain in China," *Field Museum Publications*, No. 192, 1917, p. 79.

³ Diodorus Siculus, v, 13.

⁴ Peter Kolben, *The Present State of the Cape of Good Hope*, translated by Guido Medley, 1731, p. 198.

⁵ Eugene Casalis, *The Basutos*, 1861, p. 133.

Until iron was smelted, no iron tools, such as tongs, hammer and anvil, were available. This, of course, was part of the difficulty of the earliest metallurgic operations. It is recorded that the Hottentots, when smelting iron, used tools made of stone and wood; the anvil was a block of wood, the hammer was a stone firmly bound with thongs so as to provide a grip; the tongs were pieces of bark or wood.¹ We must note also that until iron of the cast-iron or steel type was made, by the accidental inclusion of carbon, the metal was not hard enough to serve either as a hammer or an anvil for fabricating iron implements.

Among the Basutos, the blacksmith, or tribal metallurgist, is held in high esteem; he is *ugaka ea tsepe*, the doctor of iron. This is in accord with tradition elsewhere; nevertheless, in some parts of Africa the smith is disliked more than respected, and the reason may be that in his rites, as a magician, he has included sundry unsavory practices. For example, it was the ancient custom of the Venda tribe in central Africa for the smith to add human flesh to the ore in order that the iron might make a good hoe, and if no flesh was available the smith sought for it among the dead.² Throughout Darfur, we are told, the iron-workers are detested. A traveler says, "in north-central Africa from east to west they are held in general contempt, and the rest of the population do not marry with them. . . . They are a hereditary caste. . . . It is not so much to their dealing with iron that they owe their inherited unpopularity as to the employment of fire for the purpose."³ This last remark does not explain the belief. In Abyssinia the blacksmith is supposed to have the power of turning himself into a hyena, and then of committing ravages on his enemies.⁴ Among the aboriginal tribes of Siberia, such as the Chukchees and Koryaks, the smiths were regarded as shamans, or priests; the smith was "in contact with iron, which was of magical importance, and power came to him through this contact."⁵

The Baronga tribe, of Bantu race, on the east coast of Africa, obtained their first iron and other metals at Delagoa Bay from white traders and whale-fishers. They exchanged fowls and other foodstuffs for iron hoes, brass rings, and copper bars, the last of which they made into wire. Later, the wreckage of boats provided the native smiths with iron to make hoes and axes. The hoes were in the form of an ace of spades, and were fixed in a wooden handle, as were also the axes. Their principal supply of iron, however, came from the northern Transvaal, where the Bavesha had practiced the art of mining and smelting iron ore for a long time.⁶ Probably they had learned it from the Arabs. The Bavesha built their furnaces in ant-hills (termitcones). They excavated three holes under the furnace, and drove a blast into it by means of bellows made of goatskin or buckskin, the air being expelled through an antelope horn, which served as a blast-pipe, or tuyère. The ore, broken in small pieces, was smelted with charcoal, and the mixture of partly reduced ore and fuel was then allowed to cool before being crushed, to undergo renewed smelting. The resultant iron was hammered and fabricated into hoes. A wooden slat served as a

¹ Friedrich Ratzel, *The History of Mankind*, ii, 1896, p. 387.

² C. L. Beuster, *Das Volk der Vawenda*, 1879, p. 239.

³ J. T. Bent, *The Sacred City of the Ethiopians*, 1896, p. 212.

⁴ H. A. Machmichael, *A History of the Arabs in the Sudan*, i, 1922, p. 89.

⁵ M. A. Czaplicka, *Aboriginal Siberia*, 1914, p. 199.

⁶ Henri A. Junod, *The Life of a South African Tribe*, ii, 1913, p. 123.

valve for the bellows, and it is interesting to note that wooden sticks were used as tongs.¹

So far we have seen no fusion of the iron into a metal liquid enough for casting. We are dealing with truly primitive methods of making wrought iron out of a "bloom," a word which is derived from the Anglo-Saxon *bloma*, meaning a lump.

The Djour people on the White Nile in equatorial Africa produce iron by interesting methods. Their furnace is a cupola, made of stiff clay, 12 inches thick, and thickening toward the base; the cupola is 4 feet in height and 14 inches in diameter. Underneath is a small basin for the reception of the iron, and on a level with the ground are four apertures, in pairs opposite each other, for the insertion of the blast-pipes. These are made of burnt clay, and are attached to earthen vessels, about 18 inches in diameter and 6 inches in height, that are covered with a dressed goatskin, tied tightly and punctured with a few small holes. In the middle is a loop for the fingers of the operator. A boy, sitting between two of the blow-boxes, or bellows, by a rapid vertical motion of each hand alternately, drives a current of air into the furnace. This is charged with separate layers of ore and charcoal, kept in active combustion by the blast coming from eight of these contrivances. When in operation, the furnace emits a flame about 18 inches in height from the top. Relays of boys maintain a continuous blast, and when the basin under the furnace is nearly full of an agglomerated mass of iron, the charging of ore and fuel is discontinued, and the furnace is blown cold. Through an opening at the bottom a great part of the slag is withdrawn. The temperature of the furnace being insufficient to reduce the metal to a liquid state, it contains many impurities; to remove these, the iron, while still warm, is broken into small pieces, which are submitted to the heat of a smith's forge and then hammered by a granite boulder upon a small anvil presenting a face of iron only one and a half inches square, fixed into a big block of wood. By this hammering the metal is freed from its mechanical (non-chemical) impurities, and converted into malleable iron fit for use in manufacturing simple tools. The slag is crushed and washed, to extract the pellets of iron that it contains. These, in turn, are put into a clay crucible and exposed to a welding heat on a hearth, whereby the iron is agglomerated and purified. Small ingots are produced, and these are fabricated into hoes, hatchets and spearheads by being beaten into shape with a boulder wielded by a powerful man. The master smith with a haftless stone hammer, like a pestle, makes them ready for market.² Here again we see stone hammers used in the forging of iron, because as yet the artificer does not know how to make iron hard and tough enough for service as a hammer.

The Dinkas, a tribe on the upper Nile, were reputed to be good iron-founders. In the traffic of this region it was customary to use disks of iron, intended, when hafted, to serve for the making of hoes or adzes.³ These were also used as currency in trade. Much iron was diverted to ornament. Schweinfurth says that among the Shillocks the wife of a rich man is often so overloaded with iron rings and bangles that as much as "half a hundredweight" appears on her person.

¹ R. Wissmann, *The Bawenda of the Spelonken*, 1908, p. 29.

² John Petherick, *Egypt, the Soudan, and Central Africa*, 1861, p. 395.

³ Friedrich Ratzel, *op. cit.*, iii, 1896, p. 37.

Now knowing how to use a flux, such as limestone, to make a fusible slag, the primitive metallurgist got rid of the siliceous gangue of his iron ore by sacrificing part of the iron, as ferrous oxide, to combine with the silica in making a slag, ferrous silicate, which dripped aside, leaving the iron as a pasty, spongy mass, from which any remaining slag was removed by vigorous hammering.

Mungo Park, in the course of his travels through the Niger region, saw the smelting of iron by the Negroes at Kamalia, in 1797. The furnace was a circular tower, or cupola, built of clay, about 10 feet high and 3 feet in diameter, encircled in two places with withes, to hold the clay together until it was well baked. Around the lower part of the furnace, on a level with the ground, but still a little above the bottom of the smelting-cavity, which was somewhat concave, were seven openings, into each of which entered a clay tube made tight with more clay. These tubes were prepared by moulding a mixture of clay and grass around a smooth roller of wood, which was withdrawn as soon as the clay began to harden, after which it was dried in the sun. The ironstone was broken into pieces no larger than a hen's egg. A bundle of dry wood was placed in the furnace and then covered with charcoal, followed with a layer of ironstone, and so on, in alternate layers of ore and fuel, until the furnace was full. Fire was applied through one of the basal tubes, and air was blown through all the tubes by means of goatskin bellows. "The operation went on very slowly at first; and it was some hours before the flame appeared above the furnace; but after this it burned with great violence all the first night." Fresh charcoal was added at intervals. On the second night, some of the blast-tubes were withdrawn and air was allowed free access into the furnace. On the third day, all the tubes were withdrawn, but no iron was removed until "some days afterwards." Then the furnace was demolished, and the iron appeared in the form of a large irregular mass, to which pieces of charcoal adhered. Much of this bloom, or cake of metal, was useless, but there was enough good iron to render the operation profitable.¹ The iron from the smelting operation was heated repeatedly on a forge, and hammered after each heating, so as to get rid of foreign matter and make it uniformly malleable.

Bellamy gives an interesting description of iron-smelting as performed by natives in the hinterland of the British colony of Lagos, in West Africa, in 1903.² There he found a small village, the inhabitants of which were engaged in producing iron by methods that appear not to have been modified by suggestions from the outside. A community of one hundred and twenty negroid people was occupied in the mining and smelting of the iron, all of them—men, women, and children down to the age of five years—participating in the necessary operations. These people had followed their vocation as a separate tribe for many generations, but not always in the same locality. When either the fuel or the ore was depleted at one place, they moved to another. Their latest site had been occupied by them for five years.

The iron was found as haematite, containing 36.5 per cent of iron, in a soft and friable shale at a depth of only six to eight feet, underneath a layer, six feet thick, of detritus, composed largely of nodules of haematite and reddish clay. The shaly iron

¹ Mungo Park, "Travels in the Interior Districts of Africa," in John Pinkerton's *Voyages and Travels*, xvi, 1814, p. 880.

² C. V. Bellamy, *Journal of the Iron and Steel Institute* lxvi, 1904, p. 102.

ore is excavated, by means of crude picks, in pieces weighing up to three or four pounds, and is then carried in baskets to the smelting centre. There the ore, in charges equal to a barrowful, is piled upon logs of wood laid upon small sticks. Several such fires are started in the evening, and are left to burn all night. Thus the ore is dried, dehydrated and crumbled. When cool, it is crushed in wooden mortars, such as the natives use for pounding yams, with pestles also wooden and of the crudest kind. This work is done by the women and children. Next the crushed ore is screened, the sieve being a loosely woven basket. The sifted ore is then carried to the riverside, where the women wash it, by the panning process. A pit is dug in the ground; this is half filled with water, in which a woman squats, holding a calabash, or tray of gourd-rind, 18 inches in diameter, in which the sifted ore is washed. By giving a circular and oscillatory movement to her calabash, like that given by the prospector to his pan, the woman washes away the lighter and worthless particles, leaving the clean haematite on the tray, to be re-washed by another woman, who is seated on the ground nearby. The washed and concentrated ore is carried to the smelting-house, where it is fed into the furnace while yet damp. The village possessed eleven cupola furnaces. The cupola is constructed of clay; it rises $3\frac{3}{4}$ feet above the floor and is $2\frac{1}{2}$ feet in diameter at that level. The furnace cavity extends into the ground for 2 feet underneath, so that the total height of the interior is a little more than 6 feet. The basin, or base, is lined smoothly with clay. The top is domed; in vertical section, therefore, the furnace cavity has the shape of an egg. It stands upon a circular platform, 7 feet in diameter, also made of baked clay. Facing one of the doorways is the main opening into the furnace. Just inside the doorway a sloping hole underneath the floor gives access to the base of the furnace, which at this point has an aperture $3\frac{1}{2}$ inches in diameter. A little below the dome a rope of twisted creeper serves to check the cracking of the sides. In the centre of the dome is an opening, 9 inches in diameter, for the escape of gases from the furnace. Six downward holes in the cupola at the floor-level admit pairs of earthenware pipes, two feet long and $1\frac{1}{2}$ inches in diameter, through which air is forced by the bellows. The blast-pipes are made of clay shaped by hand round a stick and then slightly baked.

The author does not describe the bellows that function with these furnaces, but he describes those used by the smiths in a subsequent operation. Each bellows consists of a pair of circular wooden bowls, about a foot in diameter, over the top of which is stretched an undressed goatskin, to which in the centre is fastened a bamboo rod, one for each of the hands of the operator. From the bellows a wooden pipe delivers the blast to the clay pipes leading to the hearth of the smithy. The bellows have no inlet valves; the air has to enter into the wooden pipes through an opening left "between the hearth stone and the nozzles," but this part of the author's description is not clear. Perhaps the opening, or break, is intended to protect the wooden pipes from coming too near the heat. Evidently the bellows are of a most primitive type, and they are all the more interesting on that account.

Before starting the smelting, the blast-pipes are inserted, sloping downward, into the furnace, two to each opening, and one above the other. They are completely encased in clay, by means of which also the opening is closed. The basal opening into the furnace is plugged likewise. All is ready now for the actual smelting. This takes

about 36 hours. Live charcoal is placed inside the furnace through the main opening at the floor-level, and a fire is well started. Then this opening is closed by inserting three pairs of earthenware pipes, packed around with charcoal, and sealed with clay. Next some slag, left from preceding operations, is fed through the hole in the dome. This iron slag or clinker serves as a flux, and is essential to the smelting. More charcoal and more flux are fed alternately. Then five pounds of iron ore is introduced. The charge of ore is increased gradually to about 30 pounds, that is to say, a full calabash and a half. An interval of two to three hours separates the successive chargings, alternately with the feeding of charcoal into the furnace.

When the operation is believed to be completed, a man takes an iron pricker and opens the orifice leading into the tunnel, thereby allowing the slag to run off. Then by means of a wooden bar shod with iron the clay seals of the six tuyère-holes are broken, and the front aperture likewise is opened. The smelted iron can be seen as a hot lump lying at the bottom of the furnace. Some of the charcoal is withdrawn and then by means of a loop of green creeper the cake of iron is drawn forth, and dragged thence out of the shed, to be left to cool. Thereupon it is broken into pieces and taken to market, where it is sold to the blacksmiths, who refine it themselves before proceeding to fabricate implements.

In this smelting operation about 165 pounds of prepared ore yields 75 pounds of metal. As this ore, washed and screened, contains 60 per cent of iron, it is evident that more than half of the iron passes into the slag, chiefly as a ferrous silicate, which, in turn, serves as a useful flux, to remove part of the silica in the ore. This is a wasteful method, of course, but it is characteristic of the methods of the primitive metallurgist, who did not know that a limestone flux would serve his purpose and would yield a more liquid slag.

During the discussion of Bellamy's paper before the Iron and Steel Institute, a pregnant remark was made by F. W. Harbord: "It is probable," he said, "that the metal [iron] never collects in the fluid state on the bottom of the furnace, but as it is reduced and falls through the bath of oxidizing flux, it is partly decarburized, its melting-point raised, and the temperature is just high enough to enable it to gather together in the form of a metallic sponge, from which the fluid slag can be tapped off from time to time."¹ This is true of all such primitive smeltings. The iron is not melted completely, it is never liquid, it is merely agglomerated into a sponge that is known to iron-founders as a "bloom," which is a lump of crude iron, called "wrought iron," because it has to be wrought or worked with the hammer before it is fit for implemental use. In this instance, as Bellamy states, the carbon content is 1.6 per cent, which makes it a steel. The smiths, to whom it is sold, re-treat it on a charcoal hearth, in a decarburizing blast, whereby the carbon content is reduced to 1 per cent and the silicon content from 0.25 per cent to 0.026 per cent, yielding malleable iron.

A less rudimentary, but still primitive, smelting practice is to be found among the Waitumba people of East Africa. J. T. Last describes the operations² as he saw them on the Itumba hills in 1893. The description is valuable, because it gives one an idea of the kind of iron produced in the course of primitive smelting—"very

¹ C. V. Bellamy, *Journal of the Iron and Steel Institute* lxxvi, 1904, p. 120.

² J. T. Last, *Journal of the Iron and Steel Institute* xlvii, 1894, pp. 400-402.

much like a large lump of blacksmith's slag"; it emphasizes the unattractiveness of the first product, and the porosity of the bloom, even after re-treatment. The use of an iron hammer in this case, although on a stone anvil, marks a step of advancement in the technique.

Mr. Crawhall has given an excellent description¹ of the smelting of iron by the Jur tribe in the Sudan as observed by him recently. It is noteworthy that no forced draught, by means of bellows, is employed; the air required for combustion is admitted simply through four clay tubes, which are inserted in the side of the furnace near the bottom. The furnace, five feet in height, and bell-shaped, is made of local clay (fig. 1). The ore, broken to about one inch, is separated "into two kinds, known to the Jur natives as the male and female elements; and it is the general belief that both of these substances must be present before iron can be produced." This is a mystic interpretation of the function of flux in the smelting of ore. The charge consists of 16 baskets of charcoal, on top of which are placed 3 baskets of the broken ore. The smelting requires 22 hours, yielding enough iron to make only eight or ten spearheads. The metal forms a lump at the base of the furnace, from which it is removed by means of wooden poles. When clear of the furnace, the iron bloom is pulled along the ground by means of a fibrous rope, and quenched in water. Then it is broken into small pieces for the convenience of the smith.

The smith's forge is erected in a grass hut, to protect the iron from the sun's rays, which, it is believed, would prevent the shaping of the metal as desired. The anvil is a rough piece of iron driven into the trunk of a palm tree buried in the ground. The bellows are made of clay hooded with goatskins, as shown in figs. 2, 3 and 4. "As no valves are used, it is not possible to insert the clay stems directly into the fire, as there would then be no air-inlet into the bellows; and consequently each pair rests in a clay junction unit, which has one end in the fire and the other end open to the atmosphere. In this way, on the upward movement of the goatskin cover, air is drawn into the bellows, and, on the downward movement, a portion of the air, sufficient for raising the temperature of the charcoal, is forced into the fire through the junction unit." Small pieces of the smelted iron are placed in a clay pot, as large as a saucer, on top of a heap of charcoal. The heat suffices to soften the iron, so as to facilitate the shaping of it by the smith. Each pot contains the iron required for one spearhead. The first work done is to flatten the iron on a stone by dropping another large stone upon it, after which it is hammered into shape by a piece of iron without any haft. Lack of tools is no serious handicap, for a Jur does not hesitate to remove a hot lump of iron with his unprotected hands.

Another good technical description of primitive iron-smelting, at Dédougou, in the French Sudan, has been published recently by Robert Forbes,² and J. G. Bower also describes several methods of iron-smelting as performed by the natives of equatorial Africa in recent years. Incidentally he describes a primitive forge as used by a Negro smith in the Sudan.³ It is well worthy of quotation, because it illustrates what probably was the most rudimentary step in the technique of smelting. "A shallow basin

¹ T. C. Crawhall, *Man* 48, 1933, pp. 41 ff.

² Robert H. Forbes, *The Geographical Review* xxiii, 1933, pp. 230-247.

³ J. G. Bower, *The Mining Magazine* xxxvii, 1927, p. 137.



FIG. 1. — IRON SMELTING IN THE SUDAN
(Courtesy of T. C. Crawhall and The Science Museum,
South Kensington)

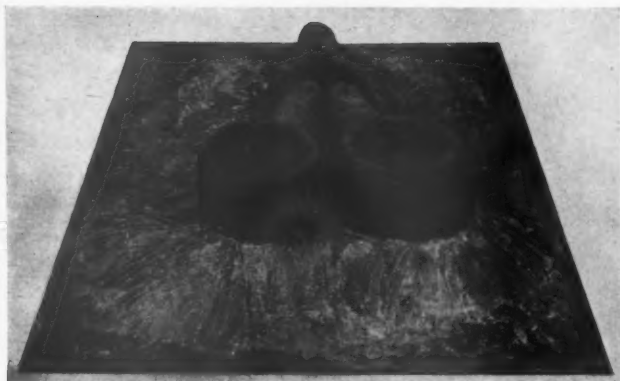


FIG. 4. — THE BELLOWS UNCOVERED
(From an Exhibit in The Science Museum, South Kensington)



FIG. 2. — THE BELLOWS
(From an Exhibit in The Science Museum, South Kensington)



FIG. 3. — PRIMITIVE SMITH'S FORGE (SUDAN)

was dug in the ground, and filled with charcoal. This charcoal was obtained by the inefficient process of simply charring some sticks in a fire. The air-blast was fed to the furnace by a short clay hood or funnel. The nose of this funnel became baked in the fire, but the remainder was only sun-dried. The inner diameter at the nose was about an inch or so, but at the other end it was about 9 inches. Two sun-dried clay tubes entered this conical funnel at the outer end, and provided the blast. Skin bags were tied over the ends of each of these tubes; and the opposite ends of the bags had slits cut through them. The edges of the slits were stiffened by strips of bamboo laced to them. The smith's assistant held the bag with his hands over the slits, and his fingers and thumb through the loops, and alternately raised and depressed each bag. On raising a bag he held it loosely, allowing air to enter by the slit, and on depressing the bag he gripped it tightly, so that the slit was closed, and the air was forced through the tube into the forge."

The people of Mambwe, in the Tanganyika territory, likewise are skilful in working iron. The requisite ore is abundant in their country; the hereditary smiths both mine and smelt it. Near the top of their furnaces is an oblique opening through which the smith can watch the progress of the operation. This argues some technical knowledge, for unless the proper inferences could be made, it would be useless to glimpse the interior of the furnace.¹

The mention by Declé² of finding ore in the river-beds prompts the remark that the early metallurgists usually obtained their ore without any elaborate mining operations. It was found loose on the surface, or dug easily out of a bank. A trustworthy observer, W. J. Hamilton, tells us of iron-making in 1842, in the Trebizond area, on the southeastern coast of the Black Sea, in the classic land of the Chalybes. The ore was obtained in the form of nodules of iron oxide that were gathered by digging with a mattock into the clayey soil. The clay overlies limestone, and it seems probable that the iron originated from the decomposition of nodules of pyrite in the limestone that yielded the clay. The native workers burned their own charcoal, and moved their forges from place to place in search of a supply of ore and of fuel. The smelting was done on a blacksmith's forge; the ratio of ore to charcoal was as 3 to 25, and the yield of iron was only 10 per cent of the ore.³

An Aristotelean writer, in about 330 B.C., records the fact that the Chalybes made iron from sand that they dug out of a river-bank, and they washed it so that it was in a fairly pure state when fed into their little furnace.⁴ The Akikuyu, in British East Africa, obtain their iron ore in the form of a magnetite sand. They pull the bloom out of the furnace by means of a rope made of banana leaf.⁵ Iron nodules found in river-beds constitute the ore smelted by the natives of Lovale and Kibokwe in the Zambezi region.⁶ Bog-iron would be another simple ore such as the primitive metallurgist could smelt readily. He might, by reason of geological change, find it in a dry deposit, although the New Englanders used to extract it from pools and marshy

¹ Lionel Declé, *Three Years in Savage Africa*, 1898, p. 297.

² Declé, *op. cit.*, p. 494.

³ W. J. Hamilton, *Researches in Asia Minor*, i, 1842, p. 276.

⁴ *De Mirabilibus Auscultationibus*, No. 48.

⁵ W. Scoresby Routledge, *With a Prehistoric People*, 1910, p. 84.

⁶ V. Lovett Cameron, *Across Africa*, ii, 1877, pp. 181 and 317.

lands by means of a crude dredging apparatus. Such ore is the work of bacteria, which secrete iron from solution in water and change it in the cells of their sheaths from a ferrous to a ferric condition, so that it is deposited as ferric hydroxide.¹

Another good description of the technique of the iron-smiths in East Africa is given by Karl Weule.² Here we have the use of green sticks of wood as tongs and of boulders as hammers. It is well to realize what help the smith obtains from iron tongs, and from the use of a hammer and an anvil made of iron itself, preferably a kind of metal harder than that which he is fabricating. Nicety of fabrication must be extremely difficult without a pair of well adjusted tongs; indeed, the imperfection of technique exhibited by the Negroes in the region south of Egypt³ has led sundry writers to suggest confidently that the Egyptians learned the art of iron-smelting from the Ethiopians, the dark-skinned people of the Sudan and Abyssinia. Any such idea is completely contradicted by the description of the weapons of the Ethiopian contingent in the army of Xerxes as given to us by Herodotus. He says: "The Ethiopians were clad in the skins of leopards and lions, and carried long bows, on which they placed short arrows made of cane, not tipped with iron, but with stone that was made sharp, and of the kind of which we engrave seals. Besides these they have javelins tipped with antelope's horn that had been made sharp, like a lance. They had also knotted clubs."⁴ Such are the weapons of a primitive people. The natives of equatorial Africa today may produce iron by crude methods indeed, but crudity of method does not prove antiquity of knowledge. We have no reason to believe that they invented the process they use; it is more probable that they learned it from the Arabs, with whom they came in contact during days long past.

The softness of wrought iron, when pure, rendered it unfit for weapons of war. In the Norwegian sagas there are several mentions of warriors whose swords were bent so that they had to straighten the weapon underfoot in the course of the conflict. The Scandinavian iron was of unusual purity because it was made by the reduction of bog-iron ore,⁵ but most of the iron produced in the course of primitive smelting contained impurities such as would harden it. Moreover, in consequence of repeated forging, the iron would absorb carbon, for that is what usually happens on the forge when the iron comes in contact with burning charcoal. A blacksmith, by the repeated forging of a piece of wrought iron at a red heat, can cause it to absorb enough carbon (from the hot charcoal) to change it into a metal of entirely different quality. If such carburized iron while hot is quenched in water it acquires the character of cast iron or steel, according to the carbon content. Such carburizing and quenching, we have reason to believe, was adopted at least as early as the ninth century B.C.⁶ To that date approximately belongs the celebrated passage in the *Odyssey* wherein Homer describes the blinding of Polyphemus by Odysseus, who poked a burning stake into his eye, and compares the act to the hissing of hot iron

¹ Edmund C. Harder, "Iron-depositing bacteria and their geological relations," *Professional Paper, U. S. Geological Survey*, No. 113, p. 18.

² Karl Weule, *Native Life in East Africa*, translated by Alice Werner, 1909, p. 268.

³ H. Garland and C. O. Bannister, *Ancient Egyptian Metallurgy*, 1927, p. 107.

⁴ Herodotus, ii, 124.

⁵ Henry Louis, *Journal of the Iron and Steel Institute* cxix, 1929, p. 34.

⁶ Sir Harold Carpenter and J. M. Robertson, *Journal of the Iron and Steel Institute*, 1933.

when plunged into cold water.¹ The effect of quenching was discovered probably when the primitive metallurgist put the iron into water with the idea merely of cooling it, so that he might be able to handle it safely and comfortably when he hammered it subsequently.

The Ynyoro tribe, living on the eastern shore of the Albert Nyanza, in the region of the Upper Nile, make *jembi*, or hoes, out of soft iron that they harden by a simple method. They envelop the pieces of wrought iron in cow dung, and then enclose them in clay. When placed in a hot fire, the iron becomes carburized outside, by absorbing carbon from the straw in the burning dung so that the metal is case-hardened. This case-hardening, or exterior carburization, explains the reference to "steel" in writings dealing with classical antiquity. The inadvertent production of iron having just the small carbon content required to make steel must have been frequent long before the essential differences between wrought iron, cast iron, and steel had been elucidated. The variant carburization of case-hardened iron, however, was not such as to yield a uniformly reliable metal.

An excellent description of primitive iron smelting is given by Stanley as seen by him among the natives of Mashonaland, in southern Rhodesia.² They construct a bottle-shaped furnace made of clay, three feet high and one foot in diameter at the top, increasing to 3 feet at the level of the hearth, with an opening (18 inches wide) in front, as shown in the photograph (fig. 5), which I owe to the kindness of Professor Stanley. Two blast-pipes enter the furnace at the back, the air being supplied by bellows made of goatskin bags, as shown in fig. 6. First a charcoal fire is started, and then a mixture of ore and charcoal is fed at intervals for several hours. The duration of the smelt was about 10 hours. The product of the operation is a flat lump of spongy iron about 20 inches in diameter. This is covered with slag and charcoal. It is extricated by means of green poles and vines. When cool, it is broken into several pieces by means of stones about 15 inches long and 9 wide, used as two-handed hammers without any haft. This breaking of the iron is done readily on account of the cellular structure of the metal, with inclusions of slag and charcoal. As yet, "it would scarcely be recognizable as iron, and is quite brittle," says Professor Stanley. This is valuable comment, for it suggests the difficulty of recognizing such iron as metal if by chance it were produced inadvertently by the heat of an unusually hot camp-fire upon a piece of ironstone. The fragments of sponge-iron are reheated several times in smaller furnaces of the same kind, each reheating being followed by hammering, with the consequence that the foreign matter mixed with the metal is slowly eliminated. Professor Stanley observes, "the number of heatings and forgings the metal undergoes, and the patience displayed by the artificers, are alike extraordinary to one used to modern methods, but, of course, it is easy to see how the slag in some cases is hardly all beaten out, while the inclusion of actual pieces of charcoal in the sponge-iron, and its gradual absorption and diffusion during working, quite sufficiently explain the production of steely iron and the unhomogeneous structure." The inclusion of a minute proportion of carbon, the consequent carburizing of the iron during forging, gives it the composition of steel, although of an inferior kind, on account of the variant internal structure, caused by the lack of a temperature suffi-

¹ *Odyssey*, ix, 371-402.

² G. H. Stanley, *The South African Chemical Institute*, March 30, 1931.



FIG. 5. — THE FURNACE, SHOWING POSITION OF BLAST-PIPES



FIG. 6. — THE FURNACE IN OPERATION

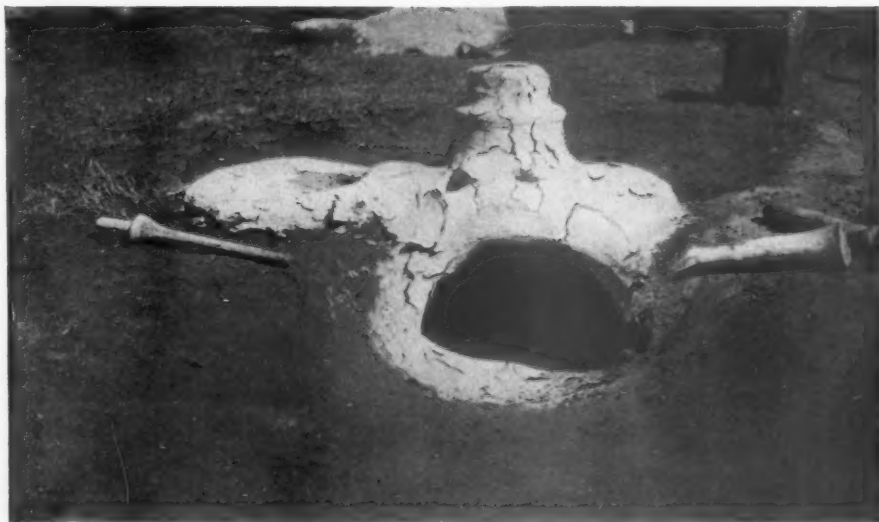


FIG. 7. — ANOTHER VIEW OF THE FURNACE

cient to produce complete fusion. Professor Stanley tells me that the furnace is supposed to resemble a woman; consequently it is decorated with breasts and tattoo marks such as the women wear; moreover, a strict ritual is observed, including avoidance of women, and abstention from certain foods while conducting the smelting operation.

The use of bellows was helpful, if not necessary, to the smelting of iron, as we have now seen it performed by various primitive peoples; the blast increased the temperature in the furnace so as to facilitate the reduction of the ore, but not until the blowing-engine was invented in western Europe was the heat obtainable sufficient to reduce iron to a liquid form, that is, to make cast iron. It is more than probable that occasionally, in the course of primitive smelting operations, a little cast iron was produced inadvertently by absorption of the carbon necessary. For example, even the inclination of the tuyère might retard the smelting of the ore in a forge of the Catalan type, so as to cause the incompletely reduced metal to remain for a longer time in contact with the charcoal.¹ Such iron, however, being hard, would not be recognized by the primitive artificer as the malleable product that he desired for the fabrication, by hammering, of his rudimentary implements.

We may assume, therefore, that the first making of cast iron, as of most complex metallurgic products, was accidental. It is probable that when the early type of forge-furnace had been heightened, at a time when a blast of adequate force was available, it was not realized that the temperature had been so increased and the conditions for reducing the iron ore were so much improved that the iron was actually melted, with absorption of the carbon in the charcoal in sufficient proportion to make cast iron. It is likely that when it happened the first time the workmen, when breaking into the hearth-wall to extricate the expected lump of pasty iron, were astonished by the flow of metal, an unexpected result that may have caused injury to some of them, as well as consternation. When this molten iron had cooled and solidified in some low spot, it was found to be so hard and brittle as to be discarded by the disgusted workmen.² Another "heat" gave the same sort of iron, and when this was repeated they were bound to conclude that it was the natural product of their furnace. It remained for them to purify, or decarburize it, which was done by puddling, thereby yielding malleable iron. Meanwhile the free flow of the completely melted iron and the cooling of it into shapes responsive to the contour of the floor would suggest the operation of casting, already familiar in the metallurgy of copper, tin and bronze. The cast iron might be too hard to hammer into shape, but it could be made to assume the desired form by the use of moulds of the required design. Thus, in due course, in western Europe, castings were produced to make firebacks, hoes, cannons, and other useful articles of manufacture. Eventually the use of cast iron enabled the engineer to achieve constructions that changed the face of the earth and gave a firm basis to our material civilization.

Primitive man did not make steel, but it was made at an early date by a relatively primitive people. The Damascus blade was long synonymous with steel of ancient fabrication. It was not made by the Arabs at Damascus but by the Chera Tamils in

¹ W. H. Greenwood, *A Manual of Metallurgy*, p. 208 (American edition).

² H. M. Boyston, *An Introduction to the Metallurgy of Iron and Steel*, 1928, p. 8.

Hyderabad, where it obtained the name, *wootz*, under which it was exported from India shortly before the Christian era. A soft and comparatively pure iron produced from the smelting of magnetite was cut into small pieces, which were packed closely in a clay crucible together with a tenth part of dry wood, chopped small. This charge was covered with two or three green leaves of the convolvulus and was then sealed with tempered clay tightly rammed. The crucible remained for $2\frac{1}{2}$ hours in a hot furnace, and the iron by absorption of a small proportion of carbon was changed to steel, in cakes of convenient size. These were then heated for several hours at a temperature just below melting, during which treatment they were turned over in a current of air from the bellows, for the purpose of expelling any excess of carbon. Finally the cakes (containing 1.33 per cent combined carbon and 0.31 per cent uncombined) were hammered into short bars suitable for commerce.¹

In the course of smelting iron ores, the early metallurgist would in some localities inadvertently include not only carbon in his metal, but, by the addition of the minerals of manganese, frequently associated with iron deposits, he would produce a manganese-iron alloy, like that of Noricum, in Styria, whence the Romans obtained a steel-like iron of famous quality.

The assumption, made by sundry authors, that the production of iron and even of steel was an established art among the Egyptians in the early dynastic period—say, of the Pyramid era—is no longer tenable. It arose from a failure to recognize the meteoric origin of the most ancient pieces of iron found amid other relics in the valley of the Nile, and it presupposed the requirement of a specially hard metal for the carving and engraving of the stone monuments. The stone-cutting was done by the aid not so much of metals as of abrasives, quartz sand and emery powder. In such work, whether the drill used be bamboo, copper, or bronze is of secondary importance, because the result is due to the abrasive, which, by presenting multiple cutting edges, is enabled to perform its task with remarkable efficiency. "Diamond cut diamond" is not a satisfactory scientific statement, because the cutting is done by diamond dust, the multiple particles being more effective than a single cutting edge of a substance of uniform hardness.²

T. A. RICKARD

¹ V. Ball, *Geology of India*, Part 3, 1881, p. 353. Also T. A. Rickard, *Man and Metals*, ii, 1932, p. 864.

² T. A. Rickard, *Man* 1932, p. 101.

THE INSCRIBED PITHOI FROM KOURION

IN publishing three pithoi from the Bamboula in *AJA.* xlii, 1938, pp. 272 ff., figs. 8, 13 a-c, I suggested that the bisyllabic word inscribed on their rims might be read as *Kuri*, an early form of the name of the city Kourion. This reading, however, is open to serious objections, and in any case it is difficult to explain why the name of the city should be inscribed on ordinary storage ware in private houses. A new interpretation suggests itself, overcoming this difficulty and fulfilling previously unnoticed demands of the archaeological evidence.



FIG. 1.—PITHOS *b* AS FOUND. X MARKS THE STONE COVER

The inscribed pots have flat bases, full bodies with two vertical handles on the shoulder, and wide necks with rounded overhanging rims. They appear to have been made on a slow wheel. They were inscribed either after baking or when the clay was leather hard. Pithos *a* is 0.62 m. high and has a diameter of 0.54; pithos *b* is 0.59 m. high and 0.56 in diameter. Only the neck and shoulder of *c* are preserved; the mouth has a diameter of 0.338 m. They were sunk into the ground with their necks protruding two or three inches above the floor, and were used for storage, probably of oil. A similar pot appears *in situ* in fig. 12 of my earlier article. Fig. 1 shows pithos *b* as it was found, broken, in its pit in room 12. The cross marks a thin slab of limestone which served as a lid. Several such pithos-lids were found during the excavations; one of these had a hole in the center for attaching a wooden handle. All three inscriptions (fig. 2) are on the upper outer face of the rounded lip, where they were clearly visible to anyone bending over the jar. This is an unusual position for inscriptions, and we shall see that it has a direct connection with their meaning.

Attention was called in the first publication to slight variations in the letter-forms and to the fact that the last vertical bar on the right of inscriptions *a* and *b* is a punctuation mark and not part of the sign. The first sign, reading the inscriptions from left to right, is an early



FIG. 2.—THE INSCRIPTIONS

form of that used in the classical period to write the Greek $\kappa\upsilon$, $\gamma\upsilon$, $\chi\upsilon$.¹ The second is identical in form to the classical $\iota\epsilon$, read as $\tau\eta$, $\tau\epsilon$, $\tau\bar{\epsilon}$ (long $\bar{\epsilon}$ from contraction or compensatory lengthening), $\delta\eta$, $\delta\epsilon$, $\delta\bar{\epsilon}$, $\theta\eta$, $\theta\epsilon$ or $\theta\bar{\epsilon}$. These signs thus allow of twenty-seven interpretations in Greek, but only one of these gives a known word.² The word is $\kappa\acute{\upsilon}\theta\epsilon$ (2nd aorist imperative of $\kappa\epsilon\acute{\upsilon}\theta\omega$, to cover quite up, to hide: the verb is common in Homer): *Put the cover on!*

This interpretation of the inscriptions is supported by the close correspondence of the signs to those of the classical syllabary (fig. 3), by the discovery of the lids to which they refer, and by their position on the pithoi. Care was taken to inscribe them where they would be seen. We can no longer claim early evidence for the name of the city; but if this new reading is correct we know that Greek was spoken in Cyprus before the Trojan war. This is not surprising in view of the probability that Mycenaean colonists had

reached Cyprus by the fourteenth century B.C. What is more startling is that the ability to read was so widespread that written orders could serve a useful purpose. This inscription, if correctly read, is the earliest dated occurrence of the Greek language in Cyprus; if it antedates the Eleusis jar³ it is the earliest in the Greek world.

JOHN FRANKLIN DANIEL



FIG. 3.— $\kappa\acute{\upsilon}\theta\epsilon$, AS IT MIGHT BE WRITTEN IN THE CYPRIOTE SYLLABARY OF CLASSICAL TIMES

¹ This syllabary derives from the Cretan, which was evolved for a language other than Greek. As a result of its non-Hellenic origin it lacked characters for many of the Greek sounds. The Cypriotes indicated these by using signs for related sound values.

Professor Roland G. Kent calls my attention to the fact that the Cypriote character *ku* does not correspond to the Greek diphthongal or spurious-diphthongal $\kappa\upsilon$, a decisive argument against *Kuri*.

² The possibility that we have a form of $\chi\acute{\epsilon}\omega$ (to pour), on the lines of the adverb $\chi\acute{\upsilon}\delta\eta\nu$ or the verbal adjective $\chi\upsilon\tau\acute{o}\varsigma$, tempts but leads nowhere.

³ Mylonas, 'Ep. 1936, pp. 61 ff.; read with slight variations by Broneer. Of other early syllabic inscriptions in Cyprus only the Enkomi balls (Persson, *Some Inscribed Terracotta Balls From Enkomi*) give clear linguistic evidence; their exact date is not known. The Theban inscriptions (Evans, *PM*, iv, ii, pp. 739 ff.) are earlier, but Persson's view (*Schrift und Sprache in Alt Kreta*, pp. 28 ff.) that they are in Greek demands further proof. The Asine bowl (Persson, *op. cit.*, pp. 4 ff.) is probably more recent than the pithoi from Kourion, and serious objections have been raised to Persson's interpretation of it. See Evans, *op. cit.*, iv, ii, pp. 755 ff.

TURKEYS OR CRANES ON A LACONIAN HYDRIA

IN THE *Annual of the British School at Athens* 34, 1936, p.p. 146; 187-9, and plate 43, Mr. E. A. Lane, in the course of a careful study of Laconian vase-painting, has occasion to comment briefly upon some curious looking birds here represented, remarking: "No parallels for the turkey-like birds (perhaps vultures?) exist except on the Boston hydria" (146), and, later on, apropos of an Etruscan aryballos in Baltimore: "Again the 'turkeys' pass in staid procession . . . he has filled the frieze with outlandish birds copied from a Laconian vase" (189).

The appearance of an actual turkey on a Greek vase from about 550 B.C. would constitute such important support to the contentions of a particular group of scholars who feel inclined to ascribe African origins to a number of plants and animals commonly believed to have been native only in America, that my attention was at once aroused, and I consulted a distinguished ornithologist, Dr. A. Wetmore, of the Smithsonian Institution, who had the kindness to write me as follows, under date of March 10, 1937: "In reply to yours of March 4 I have made careful examination of plate 43 in the *Annual of the British School at Athens*, volume 34, 1936, with the result that the birds depicted on the lower row on the urn shown appear to me to represent the Demoiselle Crane, *Anthropoides virgo*. The figures show the pendant feathers from the lower neck, characteristic of this species. The marks on the side of the head may also be supposed to represent a conventional rendering of the somewhat elongated white plumes found in this area in the crane. The Demoiselle Crane breeds from the high plateaus of Algeria to southern Russia, as well as through a wide range in Asia. As a casual visitor it spreads to various localities in Europe."

I believe Dr. Wetmore to be correct in his identification, although the artist of this particular vase was far from realistic in all details, and no doubt through much practise in sketching ducks and geese, he has managed to give a rounded shape to the bill,¹ and a structure to the body, that are a little more suggestive of those birds than of cranes. Still, the two strikingly characteristic features of the Demoiselle Crane, the white ear-tufts, and the black pendant breast-plumes, are so emphatically reproduced, that we must conclude this to have been the bird originally intended, despite the intrusion of features from more familiar birds; somewhat as certain anatomical characteristics of the dog, wolf, and fox, were not uncommonly reproduced when the ordinary Greek artist was representing a lion.

Although known in Greece almost exclusively as a bird of passage, the cranes, in several species, were familiar to all classes and professions, and the amount of lore accumulated about them is considerable.² This particular species, the Demoiselle, is

¹ The Demoiselle has, indeed, a shorter and more sturdily constructed bill than any other crane, but of course it is not rounded.

² Most conveniently assembled, perhaps, in D'Arcy W. Thompson, *A Glossary of Greek Birds*, New Edition, Oxford, 1936, pp. 68-75; on the Demoiselle Crane, especially, p. 69; Otto Keller, *Die antike Tierwelt*, Leipzig, ii, 1913, pp. 184-93. Since this particular species frequents northern Africa in winter, Macedonia, Bulgaria, and the lower Danube valley in summer, the Greeks might easily have become familiar with it in either area.

also, though rarely, reproduced in art. Aside from the three vases under consideration, one Laconian, the other two Etruscan¹ and, perhaps, as Mr. Lane suggests, actually dependent upon this very Greek vase (p. 189), there appear to be two other illustrations of this particular bird: (1) fig. 47 in Keller (ii, p. 164), which reproduces the breast-plumes, no doubt, and the ear-tufts, as well as the relative size (for the Demoiselle is the smallest of all the cranes), but shows a much smaller and slenderer body than appears in modern illustrations. (2) A gem in the British Museum.²

W. A. OLDFATHER

THE UNIVERSITY OF ILLINOIS

¹ One of these is in the Boston Museum of Fine Arts. Arthur Fairbanks, *Catalogue of the Greek and Etruscan Vases*, 1928, pl. LXI, no. 551, suggests that the birds may be "guinea hens," but that view seems extremely unlikely.

² No. 484. Imhoof-Blumer and Otto Keller: *Tier- und Pflanzenbilder, etc.*, Leipzig, 1889, pl. XXIV, 8; Keller, *op. cit.*, ii, fig. 57b, 186; A. Furtwängler, *Antike Gemmen*, Leipzig, 1900, pl. XIII 20), reproduces a more solid, and indeed dumpy body, that is a good deal closer to the general shape of the birds on the Laconian vase and its derivatives.

In order, chiefly, to keep the record straight, it should be noted that Keller's remark: "Einen Chalcedon mit goldenem Bügel und dem Bilde eines Jungfernkranichs zitiert Stephani (CR. 61, 147)" (*Op. cit.*, ii, 192), may be misleading. As a matter of fact Ludolf Stephani in the *Compte-Rendu de la Commission Impériale Archéologique pour l'Année 1861*, in the text volume, p. 147, in describing a gem which is reproduced in the atlas, pl. VI, no. 10, calls the bird represented a "Kranich, wahrscheinlich der schöne, im südlichen Europa vorkommende Jungfernkranich." The gem, however, a masterpiece by Dexamenos, is actually the same one reproduced by Imhoof-Blumer and O. Keller: *op. cit.*, XXII, 9, and Furtwängler: *op. cit.*, XIV, 4, and certainly represents not a crane at all, but a heron, as these scholars have already correctly observed.

NOTICE

THE summaries of the papers given at the Fortieth General Meeting of the Archaeological Institute of America (held at Providence, Rhode Island, December 28-30, 1938) will be printed in the June issue of the JOURNAL.

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GENERAL AND MISCELLANEOUS

Neolithic Houses.—The hill settlement of Goldberg in Württemberg has furnished traces of houses ranging from neolithic to Roman times. G. BERSU crowns the results of an exemplary excavation with a brilliant, methodical interpretation of the oldest neolithic houses belonging to the period of the Rössen culture. All of these houses have a central row of posts which support the roof, a door on one short side, and, occasionally, subdividing cross walls. Bersu recognizes the same type in the houses of Aichbühl, but justly cautions against the attempt of R. R. Schmidt to deduce a great variety of house-types from the analogous traces of houses at Aichbühl (*Germania* xx, 1936, pp. 229-243).

Yugoslav Archaeology.—In the *South Slav Herald* vii, nos. 14 and 15 (October 1, 1938), pp. 8-9, M. GRBIĆ reviews the archaeological past on Yugoslav territory. He points out the richness of the neolithic period, especially at Starčevo and Vinča, with their signs of contact with the Early Aegean civilization. Then come such sites as Trebenišće, where we find remains of classical civilization, together with native Illyrian works. Later still are the less important classical sites and then the material which shows the formation of the distinctively Byzantine culture. Finally we have such sites as Humska Cuka, which give us evidence of the coexistence of the highly developed Byzantine culture and the still primitive Slavonic culture.

Excavations in Northwest Poland.—In *Dawna Sztuka* i, pp. 171-182, JOZEF KOSTRZEWSKI discusses the recent Polish excavations at Biskupin in northwest Poland. This is a village of approximately one hundred houses, located on a peninsula in a lake in the Pomorze area of Poland, and dates apparently from the first iron age (700-400 B.C.). The lake-shore is protected by piles, and within the fortifications were houses constructed on straight streets. The settlement seems to have been of the Lusatian culture and was built for defense, apparently against the pre-Baltic population. It has been possible to restore the general

type of structure in the village, which also contained an agricultural population. Traces have been found of articles imported from various lands, including glass beads, which came apparently from Egypt. The site is important because it shows relations between the Lusatian and later Slavonic cultures. The article is republished in English in *Antiquity* xii, pp. 311-317.

Peschiera Daggers.—A Peschiera dagger found at Webdel in north Germany is compared by E. SPROCKHOFF with other Peschiera daggers found in Germany and Scandinavia. He examines the context in which these daggers were found and concludes that they should be ascribed not to the Italian Bronze Age culture but to the urn cemetery culture, which appears in Central Europe by the end of the Bronze Age (*Germania* xx, 1936, pp. 166-170).

Swastika.—A new derivation of the swastika is proposed by E. SPROCKHOFF (*Germania* xx, 1936, pp. 1-9). He believes that the swastika is a stylization of the wheel of the sun-chariot. A sun-chariot drawn by a horse is a frequent motif in Germanic designs of the Bronze Age.

Germanic Fortress.—In 1935 W. BUTTLER excavated a Germanic fortress near Cologne, the so-called "Erdenburg". This fortress consisted of a triple wall separated by moats. The innermost wall was constructed of wooden casings filled with earth, and had perhaps a gallery on top. Two gates, one placed behind the other, formed the entrance. The intervening ascending way was enclosed between walls, so that the aggressors could be attacked from the sides while making their way from the first gate to the second. A restoration by H. SCHLEIF depicts the impressive structure of this fort. Sherds of late La Tène type indicate a date in the first century B.C. Perhaps this fortress was constructed by the Sygambri in 8 B.C., when a part of this tribe moved to the left bank of the Rhine (*Germania* xx, 1936, pp. 173-183).

Pre-Roman Fortification.—In *Germania* xx, 1936, pp. 93-100, W. KIMMIG publishes the results of his excavations of a circular stone-wall fortress at Allenbach. These fortifications have

been considered as either early Celtic and built in defense against the German invaders, or as late Celtic and built in defense against the Romans. Although the excavations are not yet completed, sherds and technique of masonry prove that the fortress of Allenbach is pre-Roman. No traces of a settlement were found.

Migration of the Saxons.—F. TISCHLER attempts to prove that the Saxons were staying in Western Holstein in the late second and third centuries A.D. He bases his conclusions on an analysis of the archaeological material and correlates them with similar theories advanced by philologists and historians of law (*Germania* xx, 1936, pp. 114–120).

Germanic Houses.—The important *Warf* of Ezinge in Holland was excavated by A. E. VAN GIFFEN in the years 1931–34. This *Warf*, or artificial hill, had resulted from continuous habitation which began in the Early La Tène period and continued down to the thirteenth century A.D. Six main layers could be distinguished. Layer I furnished in its earlier part interesting information about Saxon houses and, in traces of a conflagration, perhaps also evidence of the Saxon invasion, which took place in the third and fourth centuries A.D. Commerce with Rome is attested by sigillata sherds for this and the preceding periods. Most important are, however, the La Tène settlements of Layers VI–IV. The houses found are larger and better built than the houses of Saxons. They commonly exhibit one large room subdivided by two rows of pillars; one or two hearths are placed along the central axis. One of the houses measured 22 by 70 feet. The earliest settlement (Layer VI) consisted of only one house and a barn, which was perhaps built on piles, on the principle of a lake-dwelling (*Germania* xx, 1936, pp. 40–47).

General Numismatics.—In *RevNum.*, 5e sér., i, 1937, pp. 163–213, is printed a lecture given by A. DIEUDONNÉ on the methods, technique, and bibliography of the science of numismatics, extremely useful for the beginner in the subject, but elementary for the experienced numismatist.

Sassanian Mints.—In *RevNum.*, 5e sér., i, 1937, pp. 215–234, FURDOONJE D. J. PARUCK has made a considerable addition to the existing knowledge of Sassanian mints and mint-marks.

EGYPT

Writing on Scarabs.—In the April issue of the *Expository Times*, ALAN ROWE maintains that, by

reading on scarabs and seals apparently meaningless groups of hieroglyphs on the acrophonic principle, he was able to read quite easily a number of inscriptions on scarabs and seals from the end of the XVIIIth Dynasty to the Ptolemaic era. This method of writing was expressly devised to conceal the names of gods.

MESOPOTAMIA

Mari.—In *PEFQ.*, Oct., 1938, in connexion with M. PARROT's excavations at Mari, many tablets have been found which throw great light upon the history of upper Mesopotamia in the period of Hammurabi. Among the nomads that threaten the borders around Mari, are the Habiru. There occurs a new name in this connexion: *Bene-ia-mi-na* (the Benjaminites). Zimrilim, the king of Mari, is said to have killed the *dawidum* of the *Bene-ia-mi-na*.

Seleucid Successors of Alexander.—Classical scholars interested in the Seleucid successors of Alexander in Babylonia, who are not at the same time Assyriologists, will be grateful to Mlle. M. Rutten for translating into French nineteen tablets with cuneiform writing which cast light on the life of a Babylonian city of some note under Seleucid rule, *Contrats de l'époque séleucide conservés au Musée du Louvre* (Paris, Geuthner, 1935). This work is reviewed in *REA.* xl, 1938, pp. 5–42, by ANDRÉ AYMARD. (Some of these texts undoubtedly are also treated in Miss E. W. Moore's *Neo-Babylonian Business and Administrative Documents, with transliteration, translation and notes* (Ann Arbor, 1935), which M. Aymard was unable to consult). San Nicolò in 1931 estimated the number of cuneiform texts for the sixth and fifth centuries at 7,000 but at only 150 for the third and second centuries. This is due to the increasing use of papyrus and parchment records under Seleucid rule, which have since largely vanished, and this change was accompanied by the substitution of the Aramaic and Greek languages for the old Accadian. Almost all of these Seleucid tablets come from Warka, which was the site of the Sumerian city Ourouk (*Erech* of *Genesis* X, 10) called by the Greek administrators Ὀρχῶν or Ὀρχα. (The LXX form was Ὀρεχ. Cf. Rostovtzeff, "Seleucid Babylonia: Bullae and Seals of Clay with Greek Inscriptions", *Yale Class. Stud.* iii, 1932). The translation of these contracts, doubling the number of those available to non-Assyriologists, presents us, along with astronomical texts, records of dynastic successions, co-

regencies, deaths, etc., with records of transfers of property by sale, exchange, partition, or will, sales of slaves, handing over of *bénéfices* (livings) in connection with the income of temples, and legal documents of various sorts. Aymard emphasizes that greater changes in Babylonian law were brought about by the Persian assumption of control than by the Greek conquest of the country. The fact that most of these documents deal with people connected with the Assyrian temples and that they contain no references to the official governmental chreophylax, is an indication that the Seleucid rulers were particularly liberal in their attitude toward the national religion. The author of the article discusses the great value of these records in prosopographical studies, furnishing, as they do, lists of those directly concerned in the transfers, or serving as witnesses or scribes. The "scribes" seem to have been limited in number and to have passed the profession, which was also connected with functions of priests, in generation after generation, from father to son. The last part of the review deals with the degree of Hellenization of the country, intermarriage, significance of the changes of names, addition of new (Greek) names, and the gradual and increasing tendency to return to the old and sacred Accadian names.

PALESTINE AND SYRIA

Recent Discoveries at Atchana.—In *ILN*. September 17, 1938, pp. 503–505, SIR LEONARD WOOLLEY describes briefly the results of this year's excavations at Atchana, near Antioch, in North Syria. Work was concentrated this year on the excavation of a palace which was built about 1600 B.C. and destroyed during the first half of the fifteenth century. The discoveries made help to fill the gap in Syrian history from 1650–1400 B.C. Nearly three hundred written documents which formed part of the state archives were recovered. Several building periods were distinguishable in the well preserved remains of the palace. The names of two kings were mentioned on tablets found: Niqmepa, and his son Ilima-ili. The city on the Atchana mound was known as Alalakh. The palace consisted of a central building with several annexes, which were added at different times. The annex on one side was used for living quarters; that on the other for business. There was a single entrance into the main building, with basalt steps leading up from an open court to a columned doorway. The walls of the building, which rose to a

height of two stories, had foundations of basalt, supporting a superstructure of mud brick and timber. In the central building the royal family occupied the upper story, while personal attendants lived on the ground floor. Each suite of rooms had its own bath-room and lavatory. Other servants were housed in rooms around the front court. Many fragments of pottery, toilet articles and ornaments were found in the women's quarters, which were segregated from the men's.

In a later annex built around three sides of a court and the back of the palace there were two large rooms, probably audience chambers. The archive room was also located in this building. Adjoining the offices were bath-rooms and lavatories.

Below the oldest part of the palace remains were found of a still earlier town-wall. Under this wall was another older wall, including the city-gate. This dates in the eighteenth or possibly the nineteenth century B.C. One small object of especial interest was found at this level: a copper statuette of a god riding on an eagle.

Many remarkable small objects were found in the excavation of the palace. Among those mentioned are: a ram's head of polished limestone, the oldest work of Hittite art known; part of a fine, carved ivory plaque, also of Hittite workmanship; an ivory figurine; a steatite roundel, inscribed in Hittite and another script; and quantities of pottery, including painted ware and Cypriote Bronze Age pottery.

Excavations at Al Mina, Sueidia.—C. L. WOOLLEY (*JHS*. lviii, 1938, pp. 1–30) reports on excavations undertaken at Al Mina, Sueidia, for the purpose of tracing connections between the early civilizations of the Aegean, especially of Minoan Crete, and the more ancient cultural centers of hither Asia. North Syria in the region of Mt. Kasios, near the mouth of the Orontes, was selected as the larger area providing the meeting-place of Hittite and Mesopotamian culture, and the smaller district of the Sueidia at the mound of Al Mina, "The Port," appeared to combine the natural advantages sought by early traders. The excavations carried out at this site during 1936 and 1937 have revealed below the foundations of the Crusaders' town (the uppermost stratum) nine building levels representing a continuous history of the site from the eighth century B.C. to shortly before 300 B.C. Seven thousand square meters were dug to an average depth of four meters and a half, in which the distinction of

levels was by no means uniform throughout. The hill of Sabouni, lying three miles upstream on the Orontes from Al Mina showed in trial digging much the same record as that excavated by WOOLLEY at Al Mina, save that its history could be carried back to the Mycenaean period and gives credence to the belief that Al Mina was a port with foundations in the Bronze Age, used as a distributing center to inland cities. Throughout the history of Al Mina the building material employed was the same; foundations were of stone and superstructure of mud brick, the walls being fairly thick, and covered with mud plaster, with no trace of a second storey or sign of a staircase. Floors for the most part were of beaten clay or mud. The poverty of the buildings is explained by the fact that these were not residences, but the warehouses and offices of merchants engaged in import and export trade between Asia and the Aegean. The buildings form *insulae*, roughly rectangular and fairly uniform in size. Levels IX and X (bottom) date between 750-700 B.C. on the basis of the sub-geometric pottery found in these two very thin strata. Level VIII dates ca. 700-675 B.C., showing pottery almost entirely of the Cypriote Iron Age. The town was completely rebuilt at this time. Level VII follows VIII without any sharp break and the buildings continue along the same lines. The pottery dates from 675-650 B.C. Rhodian sub-geometric ware predominates. Levels VI and V represent the period 650-550 B.C. and constitute two consecutive phases in one stage of the port's history. Some Cypriote pottery continues. But the "luxury trade" demanded the finest pottery and the main market is Rhodes, which provides pottery from the sub-geometric to the Orientalizing style. Proto-corinthian (Level VI) and Corinthian (Level V) wares appear, together with native imitations. Level IV dates ca. 520-430 B.C. A clean break occurred between this level and the previous one. Level IV is laid out in *insulae* independent of their predecessors, probably because of some revolution in the port's import business. The missing thirty years between Level V and Level IV belonged surely to the *floruit* of Level V. Athens, at the turn of the sixth century, enjoys the monopoly of the Asiatic trade. Level III covers the period 430-375 B.C. Much reconstruction of Level IV appears and the regular lay-out of the commercial town becomes clear. The destruction by fire of the previous level meant the building of Level II along the same lines; it continues until 301 B.C.,

when Seleucus Nicator built his great new port of Seleucia. The old port which probably for more than a thousand years served as an "open door between East and West" simply ceased to exist. WOOLLEY believes that Al Mina rather than Basit was the ancient Posideium, founded by Amphilocheus.

Alphabet, Tell Atchana.—In *PEFQ.* July, 1938, SIR LEONARD WOOLLEY's excavations at Tell Atchana are seen to reveal links with Ras Shamra. In the cuneiform tablets discovered at Atchana occurs the name of the mysterious *Nqmd*, a word which has already occupied students of the Ras Shamra tablets.

Lachish (Tell ed-Duweir).—In *PEFQ.* July, 1938, J. W. JACK discusses the date and import of the Lachish letters, which bring us into contact with the religious, political, and military life of Judah during the Chaldaean conquest of Judah. All these letters are to be dated towards the end of Zedekiah's reign, about Jan.-Feb., 587 B.C. Those who would date the destruction of Lachish at the close of Jehoiakim's reign (597 B.C.) are in error. All the letters are of a homogeneous character and represent the correspondence between Hoshaiiah and Jaush, the governor of Lachish. One refers to the complaint of the princes against Jeremiah (*Jer.* 38: 4). Probably the whole correspondence covers only a few weeks before Nebuchadnezzar's forces launched their attack on the fortress (587 B.C.). Against Torczyner, Jack maintains that the prophet referred to is Jeremiah, not Uriah, who was put to death in the reign of Jehoiakim.

Lachish had many connexions with Egypt which continued down to the end of the Southern Kingdom. Accordingly the inhabitants were opposed to Jeremiah, who was pro-Babylonian. It appears that Hoshaiiah favored Jeremiah and in these letters tried to exculpate himself with the governor who was pro-Egyptian.

In Letter IV it is said that the signals of Lachish could be seen, while those of Azeqah could not, and so it seems that the outpost was nearer to the former city. Maresah suits all the conditions perfectly.

One name is deciphered as Nedabiah by Torczyner. Jack maintains that it should be read Tobiah.

C. H. INGE in *ibid.*, Oct. 1938, refers to the great shaft inside the city-wall at the southeast corner; it is 80 feet long, 70 feet wide, and 80 feet deep. This shaft, dug in the seventh century B.C., was never finished. Perhaps it was con-

structed as a reservoir to replace an earlier water system.

A Late Bronze Age temple has also been excavated. A number of rubbish pits outside the original structure, but within the present remains, contained animal bones and interesting pottery. The finest piece is a polychrome vase, decorated with four metopes containing a fish and a bird and two horned animals. This vase is dated not later than 1550 B.C. Carinated bowls of the "Hyksos" type have also been found. It is supposed that the cult in this temple flourished for a total of 350 years. Almost under the altar of the second temple was found a small faience plaque of Amenhotep III, and accordingly it seems that the temple was enlarged during his reign.

Three tombs of the XIXth Dynasty were found. One contained the fragments of the first pottery sarcophagi found at Lachish. At least three of them were broken to pieces. They were of the "slipper" type. The lid is moulded to represent the features of the dead. The third coffin is unique in Palestine, for it bears an inscription in hieroglyphs and is reminiscent of the Duweir ewer. In fact the two may have come from the same workshop. In the inscription is found the expression "waters of the West," which may refer to the Mediterranean.

There was also uncovered a sealed tomb of the eighth century B.C., which was undisturbed except for an inflow of mud and water. When the tomb was sealed up, a lamp had been left burning just inside the doorway. A man and woman were buried here. He had by his side an iron knife, a lamp, a bowl, and an incense burner, while she had by her head four perfume flasks, one an import from Cyprus, and a scarab by her hand. Two water-jars were on the floor. The interior of the tomb was covered with what looked like soot, but which probably was a deposit of decomposed organic matter.

In the prosperous period of the XVIII-XIX Dynasties the inhabitants spread beyond the city walls. Cave dwellings were found which were inhabited by troglodytes in the Early Bronze Age, about 2500 B.C.

Evidence was obtained about methods of pottery-making in the Late Bronze Age; one large cave was used as a potter's workshop in that period.

The city was destroyed in 597 and 588. Before 597, a person was obliged to walk more than 40 yards after passing the outer gate before he

traversed the fortifications. On the vertical face of the upper step of the flight leading to the palace was a schoolboy's scribbling of the first five letters of the Phoenician-Hebrew alphabet in the conventional order. Here we have the first concrete evidence of the order of the alphabet in Palestine.

Palestine, Southern Desert.—In *PEFQ.* Oct., 1938, G. E. Kirk writes on archaeological exploration in the Southern Desert. He notes that the valley of Wadi Mshash is broad and has grain crops. He finds one or more rock-cut cisterns or wells in every wadi. The Arabs understand the value of the Roman-Byzantine terrace-walls built at frequent intervals across the wadis to catch the soil and prevent erosion.

Roman-Byzantine pottery was found at Khirbet Abu Tlul, while Kh. Ruwahiya has the same type and also an earlier ware. El Midhbah is a hill, the northern slope of which is strewn with pottery, beginning in the Early Bronze Age (ca. 3000-2100 B.C.), continuing through the Iron Age and ending with Terra Sigillata, the Byzantine Ware X.

At 'Ar 'ara, which is probably Old Testament Ararah (Adadah), were found ring-burnished haematite sherds of the Early and Middle Iron Ages (ca. 1200-600 B.C.), but no Late Iron Age (600-300 B.C.) was seen. Painted "Nabataean" and Roman-Byzantine ribbed sherds were also common.

Kurnub is identified with Roman Mampsis; attempts to take it back further than Nabataean times have not been successful. Here was found an interesting gravestone, bearing in a Semitic alphabet an inscription which has not yet been read; other stones of this type, a conventionalized head and body, have Greek inscriptions. Kirk has no doubt that there was a Roman road between Kurnub and Qasr el Jahainiya. The route from Abda to the Arabah is rich in sites. Abda is of Nabataean origin and took its name from King Obodas. This route goes on to Petra.

Syro-Hittite Seal.—A seal of black haematite, with a representation of four men, one a negro, facing each other in pairs, was found at Argos. The men hold animals upside down, but in place of one animal is a smaller human being standing on his feet. The filling ornaments are a rosette, sun-and-crescent, and crow's-beak pitcher. A sealstone cut by the same shop has been found at Ras Shamra; the date is the second millennium, perhaps the fourteenth century (A. ROES, *BCH.* lxi, 1937, pp. 1-4).

ANATOLIA

Carian Archaeology.—Some notable remains, studied without excavation, have been found at Gerga, ΓΕΡΓΑ, inscribed in huge letters on several monoliths; also on tombs, one of which, a tomb-temple, is preserved almost complete. Nearby is a rude colossal stone statue, probably replacing an earlier *xoanon*. At Alinda, extensive remains await exploration. At Ancinköy, two tombs are preserved to the roof. At the famous cult-center Labranda, the sanctuary, measuring 216 x 200 m., rests on five terraces and includes at least nine buildings, two of which are temples (one is preserved almost to the roof), the whole dating from the end of the Hellenistic period. The temples form integral parts of complexes, instead of standing alone like Greek temples. There is a peculiar underground passage. Altogether the place has a pre-Hellenic air, Cretan perhaps, or Hittite. Near the sanctuary is a cemetery, with several well preserved tombs. At and near Mylasa were tombs, small finds, and a remarkable cult table; at Stratonicea, Koraza, Keukai Stelai (?), various finds significant for the cult. At Panamara, the sanctuary, which measures 100 x 85 m., contains piles of marbles. Another rich site is Hylarrima, with its theater, agoras, and synagogue. Kus and Xustis were strong fortresses (A. LAUMONIER, *BCH.* lx, 1936, pp. 286-335).

GREECE

GENERAL AND MISCELLANEOUS

Submycenaean and Geometric Tombs at Delphi.—Digging foundations for the new room of the museum, workmen came upon several prehistoric tombs, one a mere trench, four others of beehive shape, in a line with each other, and another tomb which alone of them all still contained much material. Like the others, this tomb had received objects at different periods and subsequently had been violated, but two skeletons (position not ascertainable), 19 vases, and some bronzes remained. Of the decorated vases, 12 make a group characterized by poor glaze, black or red, applied to the whole, except for a reserved area on the shoulder, which usually has a simple zigzag. The shapes of the vases are all known elsewhere in the period. There is one Protocorinthian Geometric oinochoë. The bronzes include a spear-point and two fibulae, fastened together, decorated with birds and fish. Of the two burials, the earlier was in the Submycenaean-Geometric period (as yet

undefined); this belonged to a man, the owner of the spear. The second burial was that of a young girl, with whom the geometric vase was interred; this instance of inhumation is notable for the period of the eighth century. A survey of prehistoric cemeteries at Delphi is given on p. 52 (L. LERAT, *BCH.* lxi, 1937, pp. 44-52).

Excavations at Dreros in 1932 and 1936.—Close to the (Geometric) Delphinion on the east is a small agora, bordered on at least one side by a long row of steps (also Geometric), and hence akin in appearance and use to the Minoan "theatral area." Here was found a bronze statuette of a man, quite nude, of Minoan type. South of the Delphinion, in a complex of Geometric building, lay a square steatite Minoan "libation table," the first Minoan object from Dreros. A great cistern east of the Delphinion dates from ca. 200 B.C., as is proved by an inscription. Small finds include early Greek pithoi, a Dedalic terracotta head, small bronzes, and some coins of ca. 300 B.C. (P. DEMARGNE and H. VAN EFFENTERRE, *BCH.* lxi, 1937, pp. 5-32).

Krisa, Kirrha, and the First Sacred War.—Krisa, in the valley below Delphi, was destroyed probably by the Dorians, was deserted thereafter and forgotten. In the early archaic period, Kirrha was founded near modern Itēa. Destroyed by jealous rivals ca. 700 B.C., Kirrha was rebuilt in the fifth century and flourished as a port until modern times (J. JANNORAY, *BCH.* lxi, 1937, pp. 33-43).

Plataean Tripod at Delphi.—ULF JANTZEN publishes a mirror-stand (Athens, National Museum), the stem of which, in the form of snakes intercoiled, imitates the basis of the tripod which commemorated at Delphi the victory of Plataea (*AA.* 1937, cols. 336-339).

Steps and Figures of the Ancient Greek Dance.—JEAN NOGUÉ, in *BCH.* lxi, 1937, pp. 79-85, discusses Plutarch, *Quaest. Conviv.* ix, 747c. A clear distinction appears between the figure, which has mimetic force, and the steps, which represent movement.

INSCRIPTIONS

Delphi.—(1) A stone with Sicyonian associations, once read to give the name Philonikos, actually has Σεφιδόνιος, a spelling "purely and completely phonetic"; date, sixth or even seventh century. (2) Another block, at least a century later, has [Ἀκρ]αγαντίος carved by an Agri-gentine mason (lunate gamma). (3) No ancient

text says that Kleobis and Biton were twins. K. RHOMAIOS, examining the statues, has found that the two are far from identical, Kleobis being represented as the more powerful; and that the statues are shod with ἐνδρουίδες. The text of the inscription is also corrected, p. 66. (4) A seven-line text, not yet read completely, mentions the phratry of the Labyadae. (5) A fifth-century base, twice dedicated by the Messenians to Apollo Pythios, was at least 7 m. long and 2 m. wide; it bore bronze statues of some extraordinary kind, as yet undetermined. (6) Some 10 blocks with the famous exquisite egg-and-dart plus lotus-and-palmette mouldings, belonged not to a door (thus Courby), but to a quadrangular monument, probably small and square. The blocks were probably carried on eight supports; four corner akroteria crowned the whole, which stood unroofed on a high socle. Date, last quarter of the sixth century. The monument might perhaps have stood within the temple, holding the omphalos itself (G. DAUX, *BCH.* lxi, 1937, pp. 57-78).

"Lower Gymnasium," Delphi.—The inscription *BCH.* 1935, p. 9 does not give authority for a second gymnasium, otherwise unknown, but only for a lower terrace in the only known gymnasium (J. JANNORAY, *BCH.* lxi, 1937, pp. 53-56).

Attic Treasurer-Records.—The studies of A. M. WOODWARD and the late A. B. WEST in the Attic treasure-records are continued in *JHS.* lviii, 1938, pp. 69-89, with attention devoted to the Hekatompedon lists of 403/2-390/89 B.C. The present study differs from the preceding one (*JHS.* li, 1931, pp. 139-163) in making not a comprehensive study of one reconstructed stele, but a review of the post-Euclidean Hekatompedon lists down to 390/89 B.C. as a group, to determine their chronological sequence in the light of fresh discoveries. In later articles corresponding lists for the Parthenon and the Opisthodomos will be treated and likewise the later lists for the Treasures of Athena and the "Other Gods" in the second half of the fourth century. The proposed sequence for the Hekatompedon lists is as follows: 406/5 (?)—*IG.* ii², 1383; 405/4 (?)—1382; 404/3— —; 403/2—1370 & 1371 & 1384 & 1503; 402/1—1372 & 1402; 401/0—1386 & 1381; 400/399—1385; 399/8—1390; 398/7—1388 & *E.M.* 790 & 1408; 397/6—1393 & 1406 & 1448 & 1449; 396/5—1417; 395/4—1409; 394/3—1401 & *E.M.* 2512; 393/2 (?)—1404; 392/1 (?)—*E.M.* 2497; 391/0—1389; 390/89—1400.

Attic Inventories.—M. N. TOD in *JHS.* lviii,

1938, pp. 97-98, proposes certain emendations in two inscriptions published by Dr. J. Kirchner on the Attic temple-inventories of the fourth and third centuries B.C. (*IG.* ii², 1370-1552, with the addenda, in *IG.* ii², 2, pp. 797-810). In *IG.* ii², 1419, a fragment of an inventory drawn up by the Treasurers of Athena at some time after 385-4 B.C., TOD reads for l. 6 which is badly corrupt; [σ]||ηματοφο[ρε]||α||κ[ά]τρο[π]τ]. In *IG.* ii², 1469, ll. 142-144, a list drawn up in 320 B.C. by the Treasurers of Athena and the other gods, he restores the passage as follows:

κ[ά]τροπτον ἐν ἐλ[ύ]τρωι ἀργυροῦ?-
ν ἐ[λ]||ε[φ]α||ν[τ]||[ν]ην [λαβὴν ἔχον] ἔτερ[ε]
[α] κ[ά]τροπτα||.

Theramenes.—In *REA.* xl, 1938, pp. 113-124, JEAN HATZFELD discusses the date at which the "experiment of Theramenes," which brought to an end in 411 B.C. the rule of the Four Hundred, finally resulted (διὰ τάχους, as Aristotle, *Ἀθην. Πολ.* 34, 1, puts it) in the full restoration of the democracy. Questions as to the chronology of these events, in the midst of which Thucydides' narrative comes to an end, and which Xenophon passes over all too briefly, are closely connected with a number of inscriptions which have been discussed by Wilhelm, Ferguson, Meritt, Dinsmoor, and others. Theramenes' liberal movement was probably begun in September of 411, by giving to some thousands of the citizens (οἱ ἐπιεικέστατοι) who were able to meet the expense of being hoplites, the full rights of citizenship, without, however, restoring the Senate of 500, consisting of fifty from each of the ten Cleisthenean tribes. Many believe that the complete restoration of the democracy was delayed until many months later, in fact, until after the battle of Cyzicus in the spring of 410. But the date of this battle is itself uncertain. If it occurred, as seems likely, in March or April, the restoration may have taken place in May or June. It certainly had happened before the beginning of the administrative year 410-409, for Andocides (*I.* 96) gives the text of a decree, passed in the first prytany of the archonship of Glaukippos (410-409) and designed to protect the democracy from any later subversive attempts, in which there is a definite reference to this Βουλὴ τῶν πεντακοσίων (λαχόντες τῷ κνάμῳ). A further proof of this existence of the Cleisthenean Boule was seen in *CIG.* i², 105, dated by Wilhelm in the archonship of Theopompos (411-410), the heading of which, as restored by him, indicates the normal functioning of the old

constitution. The force of this argument has been, however, weakened, or done away with, by Meritt, who has shown that this inscription may with just as good or even better reason be assigned to the archonship of Antigenes, 407-406 B.C. The assembly, which in the spring of 410, discussed the proposals for peace offered by the Spartans after their defeat at Cyzicus, proposals which were rejected under the influence of Cleophon, and which would have meant the end of Athenian power, was certainly not — as Cavaignac has shown (*REH.* xcii, 1926, p. 265) — a Thera¹ menean council of moderates (ἐπεικέστοι), but a full democratic ἐκκλησία of ordinary citizens. Meritt meets this apparent contradiction with the fact that the bouleutic year began several weeks earlier than the administrative year, which always began on the first day of the month Hecatombaeon, and that the debate was held during this period. It is impossible here to go into the details of Hatzfeld's reasons for putting the return to democracy as early as January or February of 410; he bases it partly on our knowledge that the six (or seven) generals mentioned in *CIG.* i², 304, four of whom were in Samos and received pay from Athens in 410, must have been chosen in February by a thoroughly democratic régime, and partly on the fact that Theramenes, instead of staying in Athens to protect his government of the five thousand, can be proven to have left Athens early in the year, probably in January, to busy himself with the task of establishing democracies in the Cyclades, with an attempt to recover Euboea, with aiding Archelaos, and participating in the battle of Cyzicus. He thus, while saving his own face, gave Thrasyllus his chance to democratize completely the government of Athens, changing a temporary and apparently unofficial Βουλὴ into a Cleisthenean Βουλὴ, made up of representatives from the ten tribes.

Delian Building Contracts. — Based on *Inscr. de Délos*, 500-508, with some new readings (good drawings from squeezes). Advance payments to contractors, who accordingly had to be bonded, began ca. 315 B.C. and were the regular practice from then on. Free Delos got rid of (Athenian) *naopoioi*; first *epistatai*, then after 297-292 *epimeletai*, let the contracts, acting in conjunction with the architects and *hieropoioi*. The mutual obligations of the contracting parties came to be expressed in set phrases which recur also at Lebadeia later and doubtless elsewhere. For employing too few men, for defects in the work, and

for tardiness in completing it, the contractor might incur fines; if he defaults from his contract, he suffers to the extent of what the state would lose. The state is fully protected, as again at Lebadeia, but the contractor is also protected against malfeasance by the state officials. Foreign contractors in Delos were exempted from customs dues. In Delos the contractor was bound to inscribe the contract, the size of the stele or the lettering being prescribed (P. H. DAVIS, *BCH.* lxi, 1937, pp. 109-135).

NUMISMATICS

Monetary Reform of Solon. — J. G. MILNE alters the view that he had previously expressed in *JHS.* l, 1930, p. 179, with regard to the monetary reform of Solon, namely that Solon got his supplies of silver through Corinth. He now believes that it was more natural for Solon to obtain his silver from Euboea, on the ground of less expense involved in the carrying of metal from mines near Damasticum to Euboea, and from Euboea to Athens, and on the ground that the line of traffic would be less subject to risk of interruption from jealous competitors than that from Athens to Corinth, at least until Solon had got control of Salamis. This view of Euboea as the intermediary is supported by a group of coins known as *Wappenmünzen*, probably struck at Chalcis. The owl type in that series appears as an addition to an already established set of issues. The owl coins were ordered by Solon, when he wanted to relieve the pressure on the farmers of Attica by devaluing the drachma, and used Euboea to break the domination of Aegina in the foreign exchange (*JHS.* lviii, 1938, pp. 96-97).

Miscellaneous Coins. — Under the heading, *Miscellanea Numismatica*, E. T. NEWELL describes, in *NNM.* 82, various rarities from Cyrene to India that have turned up in the course of amassing his collection. Interesting among those of Cyrene is a bronze piece of the adventurer Thibron, a coin known before only in a vague reference in Photios. Coins of Cyprus, some of them from the Larnaca hoard, counterstamped pieces of Tryphon of Syria, others from Phoenicia, Palestine, and the Philisto-Arabian, Egypto-Arabian, and Graeco-Indian series make up the rest of this collection.

SCULPTURE

The Chatsworth Head. — A. J. B. WACE (*JHS.* lviii, 1938, pp. 90-95) re-examines the Chatsworth

head from the point of view of technique. The head, probably that of Apollo, dating ca. 470-460 B.C., belongs to the group represented by the bronze originals of the Cassel Apollo and the Terme Apollo. It was cast in bronze by the sand-box process, and when first cast appeared as a bare skull with no hair, ears, or eyes. All these details were added afterwards, being cast first separately. The curls at the back of the head may have been cast from solid waxen "patterns"; they have been cast solid. The asymmetry of the head, which shows a left, but no right ear, save in two slight lumps of metal, intended to produce the illusion of an ear under the short curls, is evident from the position of the neck-muscles, which indicate that the head was turned slightly to the right, in an attitude similar to that of Apollo in the west pediment at Olympia. On top of the head is a small hole, possibly a flaw, possibly also for the attachment of a *meniskos*. Traces of the place for the insertion of the rod to hold the core in position appear on the top of the head likewise. Eyes of ivory, enamel, or glass were set in separately. The bronze casing of the right eye remains. A small projection on the right side of the head resembling a metal nail suggests the possibility of a wreath. The head was cast separately and then apparently set on the torso. The casting and the finishing of this statue must have been completed not by one man but by several working together, much as the work is depicted on the Foundry Vase. The head can be regarded as another instance of the use of wooden "patterns." The process of fitting together a bronze cast in several pieces seems to have been quite normal and the finishing of the details was left presumably to craftsmen.

A Statuette in the Phidian Tradition.—D. P. DIMITROV publishes in *AA*. 1937, cols. 310-335 a bronze statuette of Zeus enthroned, found in Bulgaria near Stara Zagora (Augusta Traiana). Its importance lies in the Phidian character of the pose and drapery. To judge by the style of the hair, this provincial but comparatively pure derivative of the Phidian Zeus was made in the time of Hadrian, or under the Antonines, doubtless at Augusta Traiana, known to have had foundries as well as a connection with the Peloponnese.

Bronze Statuette of a Wrestler.—In *AA*. 1937, cols. 496-510, a paper by K. A. NEUGEBAUER on a bronze statuette of a wrestler from Dodona is reported. The figure is infibulated, and there is no

trace of a horn in the clenched right hand. It is thus not Herakles, but an athlete. Nevertheless its attitude seems to be derived from the archaic type of Herakles wrestling with Acheloös or the Cretan bull. It is probably Corinthian work of about 450 B.C.

VASE PAINTING

Corpus Vasorum Antiquorum.—In the *Proceedings of the American Philosophical Society* 79, 1938, pp. 681-693, GEORGE H. CHASE gives a brief history of the origin and development of this series of publications, laying particular stress on the fascicules devoted to American museums and private collections, and illustrating his article with plates taken from vases in the Hoppin and Gallatin Collections, the Rhode Island School of Design in Providence, the University of California, and the Robinson Collection in Baltimore.

Kabeiric Skyphos.—In *AA*. 1937, cols. 466-475, K. A. NEUGEBAUER reports a study of the Kabeiric skyphos, Berlin 3286, communicated by O. KERN to the Berlin Archaeological Society. The incised figures are not, as Furtwängler suspected, modern. The puzzling group centered about Pan becomes intelligible if we recall that Hermes was the father of Pan, and that the latter is associated in Boeotian literature with the Mother of the Gods. Here Hermes is presenting to her his son, who indeed faces the wrong way, but that is only his bashfulness. The b.-f. symposiasts of the reverse perhaps represent a Dionysiac thiasos. Another Boeotian monument, a relief from Tanagra, shows the Great Mother attended by Pan and another figure, who is perhaps Dionysos. There is a third Boeotian representation of her, as healer, on a red-figured krater.

Skyphos in Baltimore.—In *REA*. xl, 1938, pp. 43-46, in connection with the skyphos signed by Polygnotus in the Robinson Collection in Baltimore, the decoration on one side of which has been variously interpreted by Professor Robinson and Miss Freeman as Menelaus and Helen, Orestes and Clytemnestra, Orestes and Hermione, and, finally and definitively, in their publication and reproduction of it in the *Corpus Vasorum* as Paris, CHARLES DUGAS proposes to interpret the scene on face A as Telemachus pursuing the faithless servants of Penelope; on face B as Penelope following the nurse, Eurykleia, who is conducting her to Odysseus—the story told in *Odyssey* xxiii, 85, and *Odyssey* xii, 457-460. Dugas further couples the vase with, first, the skyphos of

Chiusi, one side of which represents Penelope weaving, and the other, Eurykleia bathing the feet of Odysseus (*FR.* pl. 142). This scene has given to this artist and to the painter of a number of similar vases the name of the Painter of Penelope. The second connection is with the skyphos in Berlin, which represents the slaying of the suitors (*FR.* pl. 138, fig. 2). He argues that although these two skyphoi show a more advanced stage of artistic skill, they are probably the work of this same Polygnotus (called Polygnotus II to distinguish him from the painter of the pelike of Syracuse and the stamnoi of London and Brussels), who is now shown to be also the artist termed "Lewismaler," but at a later period of his artistic activity. In support of this opinion he adduces the statement of Beazley that the work of this Polygnotus II, or "Lewismaler," whom he styles a "transition painter" ("un peintre de transition"), is quite heterogeneous, and that the contrast between his earlier and later *known* works is greater than the contrast between this later work and the skyphoi of the Painter of Penelope. He thinks it quite likely that under the influence of his great homonym, the famous painter Polygnotus, after the acquirement of a more perfect technical skill, he developed a talent or genius which led him to choose such highly imaginative themes as those offered by Homer.

A Group of Plastic Vases.—C. M. ROBERTSON publishes in *JHS.* lviii, 1938, pp. 41–50, a group of plastic vases, nineteen in all, of excellent quality, comprising a series, produced probably all in one workshop, if not by one hand. In types they include vases in the form of a head cut off flat at the neck, with the opening in the ear, full figures in the form of an aryballos, with the opening on top of the head, *aidoion* vases, dead hares, and eagles' heads, cut off flat at the neck. The various proveniences suggest but do not prove an Italic origin. An examination of the details on the painted vases shows connections with Ionian and Creto-Corinthian traditions, rather closer to the latter, especially in the practice of covering large surfaces of the vases with dots. The dating is not later than the middle of the sixth century B.C. They seem to have been made about the same time as the Chalcidian series, possibly in Etruria.

ROMAN

GENERAL AND MISCELLANEOUS

Highway at Arles.—In *REA.* xl, 1938, pp. 133–148, FERNAND BENOIT treats of the part of

the Roman highway from Italy to Spain in the region of Arles. This road formed part of a network of primitive roads which antedated the Roman conquest of Gaul. Aristotle mentions a "Heraklean way" which led from Italy to the Celts, the Celto-Ligurians, and the Iberians. This crossed, between Aix and Arles, a high, rocky plateau called today "La Crau," which played a part in the legend of Herakles' return from the Garden of the Hesperides. Rome utilized it in conquering Gallia Narbonensis, Narbo Martius, founded in 118 B.C., being their first colony in Gaul. It was marked off into stages of eight stadia (milia passuum) by milestones, many of which exist today and help to fix the route followed. West of the Rhone under the name *Via Domitia* it recalled the memory of Gn. Domitius Ahenobarbus, consul in 121 B.C. It crossed the Rhone at Tarascon and, by way of Beaucare, reached Nîmes, and, turning south, crossed the Pyrenees at the Col de Banyuls. Its course east of the Rhone is less exactly known, both topographically and chronologically. Owing to the ignorant misplacing by its finder (Comte de Grille) of a critical milestone, some of the early nineteenth-century maps, including a map of Kiepert, detoured the route toward the south so as to take in Arles, but Benoit is sure that, following the usual Roman custom of road-building, its course followed a nearly straight line from Aix (north of Marseille) to Tarascon on the Rhone. East of Aix Michel Clerc has recognized its traces on the south slope of Le Cengle. West of Aix it passed Éguilles, Saint-Jean-de-Brenasse (Pisavis), where it crosses the river Touloubre, Le Merle, Mouriés, Tericias, le Paradou, until it reaches St. Gabriel. Here a road goes off to the northeast to the Cottian Alps and one to the south to Arles. Fourteen of the milestones on this route are located, described, their numbers and inscription given, and their bearing on the route is discussed. Most of them bear the name of Augustus—four that of Antoninus Pius, and one that of Tiberius.

Leptis Magna.—In *L'Antiquité Classique* vii, 1938, pp. 51–56, J. HUBAUX gives a summary description of the results obtained by Italian archaeologists in their work of excavation and reconstruction at the site of Leptis Magna. For the adornment of Leptis, Septimius Severus imported costly marbles from every corner of the Roman empire and the present remains of the city give an impression of much greater wealth and grandeur than do those of Pompeii. The forum at

Leptis is an immense square of buildings lined with colonnades. Various styles and orders are mixed, but the effect is never discordant. The remains of the baths are scarcely less magnificent than those of the forum. The work of restoration is being expended chiefly on the Severan basilica, a structure some 90 m. long and 30 m. wide, the largest of all Roman basilicas.

Third-Century Grave.—In *AA.* 1937, cols. 339–348, C. M. DANOFF describes the objects found in a grave at Wárbovka in Northern Bulgaria: coins of Verus, Severus, and Geta; two strigils, the better preserved of which is remarkable, its tip fashioned like a human figure, its arch engraved with a landscape; a fine bronze vase in the shape of a boy's head and shoulders, compared by the writer with other specimens of its type from Bulgarian sites.

Etrusco-Celtic Bronzes.—E. KUKAHN assigns two sets of bronze ornaments, one in the British Museum, the other in the Wallraf-Richartz Museum, Cologne, to North Italian and Alpine regions and dates these ornaments in the fourth century B.C. He identifies some of them as parts of a helmet and others as ornaments of cuirasses (*Germania* xx, 1936, pp. 100–104).

An Etruscan Infundibulum.—In *AA.* 1937, cols. 285–308, HERTHA SAUER shows that a bronze handle in Berlin (in the shape of a female figure crowned with a palmette, with certain zoöomorphic additions) is from the same instrument as a well known head in Copenhagen, discovered with it at Capua. The object was an Etruscan funnel with hinged strainer, of the late sixth century. A list very fully illustrated, of similar Etruscan *infundibula* is given and a discussion of their purpose.

Bronze Vases.—Two bronze pails from Neuburg-on-the-Danube are published by J. WERNER. One of them is adorned with two female heads. Similar bronze pails have been found in France, Germany, and Scandinavia. They were made either in Gaul or in Roman Germany in the second or third century A.D. (*Germania* xx, 1936, pp. 258–261).

Bracelet-Purses.—The ingenious form of bracelet expanded on one side to a leech-shaped container, which was used as a purse, forms the subject of an article by M. A. EVELEIN (*Germania* xx, 1936, pp. 104–111). The writer gives statistics of the purse-bracelets and believes that the type was evolved in Mayence from native Germanic models. A similar metal purse is perhaps represented on a tombstone of the second century A.D.,

the period when the purse-bracelet came into vogue.

ARCHITECTURE

Trier.—An important contribution to the history of Roman Trier is given by H. KOETHE (*Germania* xx, 1936, pp. 27–35). Trier is not an Augustan settlement, as commonly believed, for the late Augustan and Tiberian material has been found *below* the regularly planned streets of the city. This material comes from a *vicus* and a camp installed on the site in the Augustan period. The regularly planned city is Claudian; the foundation may have been a result of the policy of peaceful penetration which Claudius pursued in Gaul. The area of the early city is discussed and its relation to suburbs clarified and illustrated in a plan.

Palaestra at Philippi.—Though destroyed generally to its foundations, and in part overlaid by a church, the imposing scheme of a large court, a small amphitheater, and numerous other rooms can be made out. Date, 161–175 A.D. (P. LEMERLE, *BCH.* lxi, 1937, pp. 86–102).

INSCRIPTIONS

Roman Dedication.—In *L'Antiquité Classique* vii, 1938, pp. 81–85, H. VAN DE WERD proposes a new reading of a Roman dedication found in Palestine, and probably dating from the reign of Hadrian. He suggests that VIXII, previously read as two numerals, is really an abbreviation for *verillationis*.

SCULPTURE

Roman Portraits.—In *Archaeologiai Értesítő* li, 1938, pp. 1–6, ANTON HEKLER publishes a portrait head, recently installed in the Museo Mussolini in Rome, which is established, by comparison with heads in Parma, Florence, Pisa, and the Vatican, as that of Julius Caesar. A head in a private collection in Berlin, here published for the first time, is shown to be a youthful portrait of Claudius. A head in Madrid is believed to be that of Vetulonium Civica. Finally, two heads in the store-rooms of the Vatican are safely, by comparison with the reliefs of Trajan's Column, identified as those of Trajan and Licinius Sura.

Marble Relief from Athens.—In *REA.* xl, 1938, pp. 125–132, FERNAND CHAPOUTHIER describes a cylindrical piece of sculptured marble which he saw in Athens several years ago but which has since found its way into some private

collection. It is about 6.5 cm. in height, conically enlarging toward the top (2.5 cm. broad at the base and 3 cm. at the top), and broken off at the base. The technique shows evidence of the use of a drill. The decoration is in four bands; the three lower ones are covered by strange-looking animals: ten griffins with protruding chests fill the two lower bands and on the one above are three sphinxes with widespread wings, of which those on the sides are naively supposed to give profile views of the one in front. On the back of this cylinder, in three plaque-like frames, are, at the top, a plain vertical cross; in the middle, a bee, with its wings flattened over thorax and abdomen and with the legs spreading to right and left from the neck; and in the bottom square, a four-petaled rosette. The whole is crowned by a triple temple, of Ionic order, facing in three different directions. The part facing front has a triple façade with four columns in the middle and four on each side. The temples on the sides (which may perhaps represent side views of the front temple) show a single façade of five columns. This decoration, with its sphinxes, griffins, rosette, and bee, is frequently associated with Artemis of Ephesus, being found on her pedestal, near her head, or on her arm. The bee is her particular symbol (cf. Thiersch, *Artemis Ephesia*, I, 1935). The author adduces frequent examples of the triple temple as the headdress of Artemis, referring to Amelung, *JOAI*, 1909, pp. 172-173, Imhoof-Blümer (*Nomisma* 1911, pp. 11-12, "Aedicula als Kopfschmuck der Artemis Ephesia"), and Thiersch. Chapouthier reproduces eight specimens of these numismatic illustrations of temple headdresses. He thinks that the marble fragment was originally mortised into the head of a statuette of Artemis, 25 or 30 cm. in height, and agrees with Thiersch that it is to be dated in the time of the Antonines. The addition of a second and a third temple at Ephesus in imperial times, and the meaning and use of the word *νεωκόροι* (caretakers of the temple) are fully discussed.

Reliefs in Warsaw.—In *Dawna Sztuka* i, pp. 259-270, KAZIMIERZ MAJEWSKI publishes two fragments of ancient bas-reliefs now preserved in the National Museum of Warsaw and formerly part of the collection Pac. The first is a fragment, probably from a sarcophagus, of Herakles rescuing Hesione. The fragment, much in the style of a specimen in Cologne (Robert, *Ant. Sark. Rel.* iii, pl. XLII, 137), contains only Herakles and the monster, but the poses suggest this subject. It

was probably a Roman copy of the end of the second or the beginning of the third century. The other fragment, an Amor in a chariot, seems related in subject and manner to the two sarcophagi in the Campo Santo of Pisa and one in the Vatican Museum.

Dated Terracottas.—From the workshop of the potter Servandus of Cologne came two terracotta bases, which are both dated in the year 164 A.D. Even the days are specified: the first has the date of February 25; the second that of September 13. W. REUSCH points out that February 25 was widely celebrated as the founding date of the Antonine dynasty, because it was on this day that Hadrian adopted Antoninus Pius in 138 A.D. September 13 is called *Jovi Epulum* in the *Fasti* and was one of the days on which the *ludi Romani* were held. Reusch conjectures that this festival may have been chosen as the date of the marriage of Lucius Verus and Faustina in 164. The usually exact dating is used on the two terracotta bases, because they were produced as special votives for the festivals celebrated on these dates (*Germania* xx, 1936, pp. 112-114).

ROMAN BRITAIN

Pottery in Yorkshire.—In *AJ.* xviii, 1938, pp. 262-277, PHILIP CORDER and T. DAVIES PRYCE discuss finds of Belgic and other early pottery at North Ferriby in Yorkshire. Almost all this pottery dates from the first half of the first century A.D. The authors end their article with a valuable, concise statement of the details of pre-Claudian commercial penetration of England, as evidenced by the finds of certain types of pottery.

EARLY CHRISTIAN AND BYZANTINE

The Thracian Rider.—In *Antiquity* xii, pp. 290-296, GAWRIL KAZAROW discusses the relationship between the Thracian Rider and St. George. He points out that the Thracian Rider was a very popular figure in ancient Thrace and was a powerful nature-divinity, with influence on all human activities. This mounted figure came to play a rôle in the development of the mounted Christian saint. The serpent found in the pagan reliefs now became the enemy against whom the Saint had to fight. The shrines of St. George are often closely associated with sites where there were cults of the Thracian Rider.

Boxwood Casket.—In *Archaeologia* lxxxvi, 1936, pp. 91-100, PHILIP NELSON has published a short article on an ancient boxwood casket which

bears scenes from the life of Christ. The lid is now the property of the Convent of the Sacred Heart, Hammersmith. It was discovered in the early part of the nineteenth century at Utttoxeter. The lower part was acquired by the author in 1921. The box, which is six inches long, two and three-quarters inches wide, and three and one-half inches high, was carved out of a solid piece of boxwood. The lid was originally joined to it by means of concealed hinges. The scenes which are carved on the surface in high relief are: the Nativity, the Baptism of Christ, the Triumphal Entry into Jerusalem, the Institution of the Eucharist, the Crucifixion, the Appearance to the Magdalen, the Ascension and the Last Judgment. The technique is similar to that used in ivory carving. Mr. Nelson suggests that the casket is of Anglo-Saxon workmanship and that it is to be dated about 1020 A.D.

MEDIAEVAL

Fortresses of Central Greece.—An introductory sketch of the history and topography (map, p. 140), including a note on Davlia and its peculiar church of the Sts. Theodore, is found in *BCH.* lxi, 1937, pp. 136–208 (A. BOX). Three of the numerous isolated towers are briefly studied, at Moulki, near Livadeia, and at Dadi. Of the three great fortresses, *Bodonitsa*, high on a flank of Kallidromos, controlled Thermopylae. Taken by the Crusaders in 1204–5, it withstood the Catalans a century later, and fell to the Turks in 1410; hence it had two centuries as a semi-independent fief under the Pallavicinis and Zorgis. The walls, in the form of two concentric ovals, make free use of extensive classical circuit walls (the classical city was Pharugai), some of which, on the east, are cyclopean. The mediaeval fort—even the inner wall, with its barbican—is strikingly simple, practically a mere curtain wall. It was built by the Franks, probably soon after 1222. *Salona* (Amphissa) was under the (Frankish) Autremencourts for 106 years, then under the Catalans for 83, and was taken by the Turks in 1394. As at Bodonitsa, fine classical walls underlie two mediaeval circuits, the outer of which, now much ruined, protected the village, the inner and higher fort divided into a lower half for the garrison, the upper for the seigneur. The remains of the inner fort are extensive and complex. One round tower represents Byzantine fortifications; the rest are Frankish, built on Byzantine and classical foundations, but adding an elaborate redoubt; some parts, however, built to take firearms, hence ca. 1500,

must be Turkish. *Thebes* was capital of the themes of Greece and the Peloponnese, united since the eleventh century; it guarded the roads passing south to the east of Parnassus, as Salona did those to the west. No Byzantine remains survive, and of the fine chateau built by Nicholas (II) de Saint-Omer on the Cadmea, only a thick tower, built of classical blocks, survives. The rest of Thebes was destroyed by the Catalans in 1314, and *Livadeia* took its place. The Catalans were admitted to Livadeia, and they fortified it to be their military capital; the fort could still stand a siege five centuries later, and is today well preserved. The Turks replaced some crenellations with loopholes; the main work has little that is classical, Byzantine, or Frankish. It was the Catalans who built the two great walls. Their work is more careful than any at Bodonitsa or Salona.

Bronze Vases.—A substantial discussion of bronze kettles of the migration period is given by F. BEHN in an article in which he publishes three bronze vases found at Bensheim. The kettle type discussed was in use from the first to the sixth centuries A.D.; most of these kettles come from Norway but they were perhaps produced in Italy to be exported to the North (*Germania* xx, 1936, pp. 120–126).

Visigothic Fibulae.—J. MARTINEZ SANTA-OLLALA discusses Visigothic eagle-shaped fibulae. He traces their development to the fibula of the treasure of Petrossa and assumes that these fibulae derive from late Roman fibulae. Santa-Ollala publishes several new examples, among them the excellent fibulae in the Walters Art Gallery, Baltimore, which he considers to be the earliest examples from Spain. (Not mentioned are the fine examples of the Bliss Collection (cf. *Catalogue, Dark Ages*, Worcester Museum, No. 86).) He points out that the eagle-fibulae belong mainly to the sixth century and that their development runs parallel in Italy and Spain (*Germania* xx, 1936, pp. 47–52).

Worthy of mention also is the Merovingian fibula found at Gondorf. Its decoration shows Daniel in the den, and it is signed by the artist (*Sugiricus fecit*) (*Germania* xx, 1936, pp. 47–52).

Runic Inscription.—An iron sword found in 1934 at Steindorf, Bavaria, bears an inscription in runes, which is tentatively translated: "I dedicate the sword . . . (name of owner)." The sword is dated by its ornament in the seventh century A.D. (H. ZEISS and H. ARNTZ, *Germania* xx, 1936, pp. 127–132).

RENAISSANCE

Classical Influence on Michelangelo.—In *Dawna Sztuka i*, pp. 183–192, KAROLINA LANC-KORÓŃSKA discusses the classical influences in three works of Michelangelo, the Bacchus, the David, and the fresco of David and Goliath. She shows that in the first Michelangelo uses classical motifs; in the second he uses details of the Hercules tradition, which in his time was regarded as the pagan antithesis to David; and in the third, details of the Mithras legend. In other words, while the general spirit of the classical art was alien to the artist, in details it was very congenial, and he used it freely.

French Wood Engravings.—In *Dawna Sztuka i*, pp. 193–208, RENÉ SAULNIER and HENRI VAN DER ZEE discuss the theme of the good servant, as found in some French wood engravings of the sixteenth–eighteenth centuries. The figure is represented with the ears of a donkey, the snout of a hog, the legs of a deer, etc., so that he can do all things for all men. The authors show that the same figure is connected with the College of Winchester in England and also in a Polish wood engraving of 1655. Apparently this was a French popular conception from the sixteenth century, but very few representations of it have been preserved.

U.S.S.R.

Caucasus.—1. The excavations begun in 1935 by E. I. KRUPNOV of a Bronze Age Cemetery at Zagli Barzan, near Upper Koban, were continued in 1937. Objects found confirmed the original dating of the earliest period of this burial ground in the early Bronze Age, the second millennium B.C.

2. In the autonomous region of Ingushetia excavations were conducted near Alkhasta (formerly Stanitsa Feldmarshalskaiâ), in the gorge of the Assa River. A large ancient settlement with a cultural stratum one meter in depth was discovered. Preliminary excavations yielded pottery with linear and triangular ornamentation, stone and pottery spindle-whorls and weights, bone artifacts, a bronze ring, and a bronze spiral tube. The settlement was dated tentatively in the first millennium B.C.

A caved-in catacomb, discovered in a forest nearby, contained a flexed female skeleton and grave furniture similar to that of the so-called Alan culture, attributed to the period from the sixth to the tenth century.

Crimea and Black Sea Region.—1. The Olvia

(Olbia) Expedition (L. M. SLAVIN, leader) continued excavations on the Kerch Peninsula. The northeastern part of the upper city apparently served as a necropolis. Burials found there date from the middle of the sixth century B.C. (the time of the first Greek settlement) until the end of the fifth century A.D., when this area was included within the city limits and was surrounded by a defensive wall. In 1937 eleven burials were uncovered, some of them containing native (non-Greek) flexed skeletons and painted pottery vessels of archaic style, imported from Rhodes and Samos.

Several city squares, dating from the fourth century B.C., were excavated at the top of the necropolis. The houses were built upon terraces and extended up the hillside, connecting the upper and lower cities. One of five completely excavated buildings was situated on the central terrace, facing north, and consisted of eleven apartments grouped around three paved courtyards, in the east, the west, and the center of the structure. The presence of small limestone altars and terracotta figurines of local deities suggests that this may have been a communal edifice. Other buildings in this quarter were dwellings, consisting of one or two paved courtyards surrounded by living-quarters and outhouses. Under some of the structures storage cellars were found.

In the southern part of Olvia the excavation of a large bakery, attributed to the period from the first to the third century A.D., was completed. There were twelve rooms, seven containing ovens. Some of the latter, well preserved, were carefully paved with clay slabs and bricks. Large pithoi and amphorae, used for storing grain and flour, were also unearthed. In the same area were the remains of a defensive wall of the post-Getic (Dacian) epoch, built to protect the harbor, which from the first to the fourth century A.D. was located in the southern part of the lower city. There were also remains of dwellings built against this wall.

Excavations on a large scale were conducted at the principal necropolis of Olvia, where two subterranean vaults containing dromoi (?) of the third and second centuries B.C. were uncovered. Among the two thousand small objects discovered there were: 350 copper and silver coins; 150 potters' stamps on pots and sherds; 250 iron, copper, and bronze objects; and several hundred complete vessels, including those of Olvian manufacture as well as Italian and Greek importations.

2. The Kerch Expedition continued excava-

tions at Myrmikia and Tiritaka, where fourteen cemented cisterns were discovered. Among the important finds was a Late Hellenistic marble torso of Dionysos, draped in a panther's skin, and two thousand billon coins of Rheskupidides V (?), during whose reign Olvia was invaded. In the southeastern part of the site the foundations and part of the walls of a four-naved sixth-century Christian basilica were found. In the Roman period the site of the basilica had been occupied by a fish-salting plant. There a few cisterns and six very large pithoi, probably used for storing fish, were discovered. Excavation of the basilica yielded marble columns; fragments of marble revetment; pieces of window glass; several capitals, including a well preserved, imported Ionic capital, bearing the image of a cross; and some fragmentary Byzanto-Corinthian capitals. All marble objects were imported from Proconnesian ateliers. This basilica is of particular interest as an illustration of the intensive building activities sponsored in the Bosphorus by Justinian (527-565) when this area was already a part of the Byzantine Empire.

Excavation in the northern part of Myrmikia resulted in the discovery of a defensive towered wall, built in the fourth century A.D. The street alongside the wall was paved with rubble and broken pottery, and was bordered by a sewer. On the opposite side buildings of the early Roman period, associated with a large complex of cemented cisterns, were found. Epigraphic material came to light at Tiritaka and Myrmikia for the first time, when a marble fragment bearing a dedicatory inscription of the first century A.D. was unearthed at the former and a portion of a marble slab with an inscription in verse of the fourth century B.C. at the latter.

3. The Eski Kermen Expedition continued excavation of the dwelling complexes in the eastern part of the *gorodishche*, studied ancient fortifications on the surrounding rocks, and surveyed the vicinity. Excavation of the *gorodishche* revealed the remains of two large buildings with many cellars cut in the rock. Four skeletons (a man, a woman and two children), apparently of inhabitants who were killed by fire, were discovered in one of the cellars. A gold ring and other ornaments, a gold Byzantine coin, and three oriental coins of the end of the thirteenth century were unearthed near the skeletons. A similar burial had been made in another part of the city, where three skeletons, with saber cuts on the

skulls, were found in a cellar. This find was also accompanied by a gold Byzantine coin of the thirteenth century. It is highly probable that both groups of remains are related to the invasion of Nogai Khan, who despoiled and burned a series of Crimean settlements in 1299, and that this date marks the end of Eski Kermen as a settlement.

4. The 1937 Expedition began a systematic study of the circle of defenses surrounding the ancient city. The foundations of the towers cut in the rock, as well as those of the main wall, were uncovered. These towers were first constructed in the fifth or sixth century and were rebuilt many times, but at the time of the destruction of the town in 1299 they lost their original defensive value.

FAR EAST

Far Eastern Glass.—In *Bull. Mus. Far Eastern Ant.*, Stockholm x, 1938, pp. 1-64, C. G. SELIGMAN and H. C. BECK discuss the importation of Western glass and the manufacture of glass in the Far East in one of a series of articles dealing with contacts between Europe and Asia. The study is based on beads collected in the Orient by the authors, and on specimens furnished by various scholars and museums. The findings are based in part on gravimetric and spectrographic analyses of Western and Chinese examples. Rhodian and Egyptian beads, as well as specimens of the Roman *millefiori* type, have been recovered at Loyang and even in Indonesia. The writers note that glass beads were made in southern China in imitation of foreign examples in the fourth century A.D., a century earlier than the traditional date for the beginning of the industry in China. Beads of the "compound eye" and "approached eye" types are specifically related to Mediterranean prototypes of the La Tène period and later. A section of the article is devoted to the so-called "Buckley Bowl" in the Victoria and Albert Museum, a unique vessel which the authors conclude was made in China under the influence of Egyptian and Near Eastern wares of the early centuries of our era. The paper concludes with the reiteration of the discovery that the presence of barium in large amounts may be taken as an indication of the Chinese origin of the objects analyzed. The writers suggest that even as early as 300 B.C., before the establishment of the trade routes, western beads were reaching China by hand trade, and were being imitated. These copies were of types common in Europe in the Late Iron

Age (500-400 B.C.). It is proposed that the penetration of these beads may indicate that iron found its way to China at the same time and by the same route. The article is profusely illustrated.

Buddhist Bronzes.—In *ILN*, July 23, 1938, p. 173, H. G. QUARITCH WALES, Field Director of the Greater India Research Committee, describes some of the material which has been discovered. At the base of the western foothills of the Malay peninsula the tributaries of the Perak River deposit rich tin-bearing alluvium. These alluvial deposits have buried the remains of early Indian cities too deeply for them to be uncovered by an ordinary excavation. Occasional objects have been found, however, in the course of mining activities. The first to be reported and given to the Perak Museum was a small bronze Buddha of Indian Gupta style. This and another figure of the same style indicate that Hinayana Buddhism was prevalent in the district about the fifth century A.D. Three other bronzes are evidence for the predominance of Mahayana Buddhism during the eighth and ninth centuries. One of these figures, also now in the Perak Museum, is an eight-armed standing figure of Avalokitesvara. Another represents the same deity seated on a lotus throne. These bronzes show that the Malay peninsula played an important part in the cultural history of the eighth and ninth centuries A.D.

Bronzes from Loyang.—In *Bull. Mus. Far Eastern Ant.*, Stockholm x, 1938, pp. 65-81, BERNARD KARLGREN gives a review of S. UMEHARA's *Rakuyo Kinson Kobo Shuei*, a collection of the best specimens from the ancient

tombs of Loyang. The reviewer criticises Ume-hara's vagueness in dealing with the question of the provenience of the bronze vessels discussed; he further attacks the Japanese scholar's sins of commission and omission in the works selected for discussion. The most important contribution in this article is in Karlgren's correction of another slip of Ume-hara's in the dating of two silver stands in 332 or 278 B.C., which Ume-hara by hasty conjecture had dated at 210 B.C. Karlgren concludes on very good evidence that the date of the Kints'un graves extends over the period 450-230 B.C., and that not all the material recovered from these graves can be dated contemporaneously. One gathers that neither in scholarship nor in the quality and selection of the reproductions is Ume-hara's work an improvement on Bishop White's *Tombs of Old Loyang*.

The Collection of Sven Hedin from Khotan.—In *Bull. Mus. Far Eastern Ant.*, Stockholm x, 1938, pp. 83-113, GÖSTA MONTELL gives a *catalogue raisonnée* of the small objects in metal, clay, ivory, and mother-of-pearl acquired by Sven Hedin at the Khotan oasis. The collection includes a number of bronze Buddha images that are interesting as Transitional types between Indian and Chinese sculpture. Among the gold objects is an Eros in a provincial Hellenistic style. Valuable as evidence of trade between Central Asia and Byzantium are a number of forgeries of sixth-century "solidus" coins. What may be part of a bone apron points to the penetration of Tantric sects into Turkestan. The paper concludes with an appendix by HELMER SMITH on fragments of Sāka and Sanskrit sūtras, and a valuable bibliography.

NEWS ITEMS FROM ATHENS

The Centenary of the Greek Archaeological Society was held in Athens, from Sunday, October 23rd through Thursday, the 27th. Delegates from many countries were entertained with various excursions and visits to the Museums, the weather unfortunately preventing the visit to Epidauros and the presentation of Greek dances in the theatre there, which had been prepared by the Greek Lyceum Club. The performance of the *Electra* in the Odeion of Herodes Atticus had also to be abandoned. Visits were, however, made to the excavations of Plato's Academy and to Daphni and Eleusis, where Mr. Kourouniotes has finished the excavation of the "Sacred House," a group of buildings surrounded by a polygonal wall, outside the south gate. This site shows traces of buildings dating from Middle Helladic times, but its religious character appears to date from the end of the Geometric period, when a building of that period was converted into a place of worship. Sacrificial vessels containing ashes, and other vases apparently votive in character indicate that the building was used for this purpose during the seventh century. It seems to have been destroyed in the sixth century, and a small temple constructed on its site in Peisistratid times. The foundations of this temple have been identified, and tiles of the same character and of the same island marble as those of the Peisistratid Telesterion have been found. The surrounding polygonal wall appears to be of the same date.

On December 14, 1938, the annual Winckelmann's celebration was held at the German Institute. The Director, Mr. Wrede, gave a brief summary of the various sites excavated, or studied, by members of the Institute during 1938. He was followed by Mr. Kübler, who described his more recent excavations in the Kerameikos and continued with an illustrated discussion of the early pottery. Mr. Kübler has excavated in the vicinity of the tomb of Hegeso, where the original ground-level falls steeply northward into the ancient bed of the Eridanos. From the forty-nine Protogeometric and Geometric graves excavated a fine series of vases was recovered, many of the Early Protogeometric period, and others belonging to the transitional phase between Late Protogeometric and Geometric. These have all been arranged in chronological order in the new museum of the

Kerameikos, which was completed last spring. The Museum does great credit to the donor of the funds for its construction, the late Mr. Gustav Oberlaender, and especially to Mr. Kübler, who has been untiring in his efforts to arrange the material from the excavations in such a way that it presents at the same time an artistic appearance to the less learned of the Museum's visitors and also provides an excellent opportunity for specialists to study the important series of vases in their chronological sequence (figs. 1-3).

In the entrance hall of the Museum are placed some of the most interesting of the sculptured monuments, such as the stele of Ampharete with her grandchild and the sixth-century poros stele of a man with sword and staff, one piece of which was found in 1936, while the lower part was discovered by Mr. Kübler in his recent excavations near the Eridanos (fig. 4). An examination of the Themistoclean embankment wall of the Eridanos, by the Sacred Gate, produced some important finds, including the upper half of the early archaic stele found in 1927 in another part of the wall;¹ a fragment of another, somewhat later poros stele, half of an Ionic poros capital, and a marble stele, about 2.00 m. high, showing a life-size figure in relief of a man holding a garland in his right hand.

The excavations at Olympia are continuing under the direction of Mr. Kunze of the German Institute. It has now been decided to clear the whole of the Stadion. Further discoveries have been made in the course of this work, which will take several years to complete. When the ramps for the spectators were enlarged in the fourth century, the floor of the Stadion was reconstructed with a surrounding water-channel and the bases of the ramps marked by a course of poros blocks. The floor of the Stadion as it existed before the fourth century is not traceable. The ramps were enlarged once more in early Imperial times and a final renovation occurred in the second century A.D. The Stadion fell into disuse after the fourth century and the whole site gradually silted up. The excavations also brought to light an underground channel, constructed of large poros blocks, through which the surface water escaped from the race track to the bed of the Alpheus. More re-

¹ Buschor, *AM.* li, 1926, pp. 142 ff.

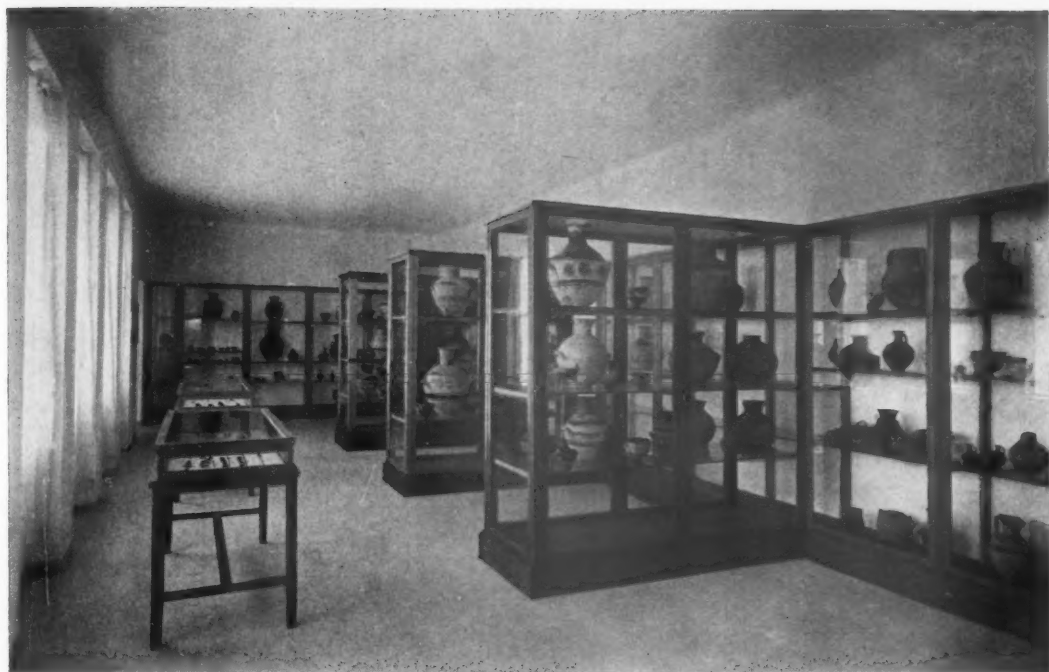


FIG. 1. — KERAMEIKOS MUSEUM. GALLERY WITH GEOMETRIC POTTERY
(Courtesy of Mr. Kübler)

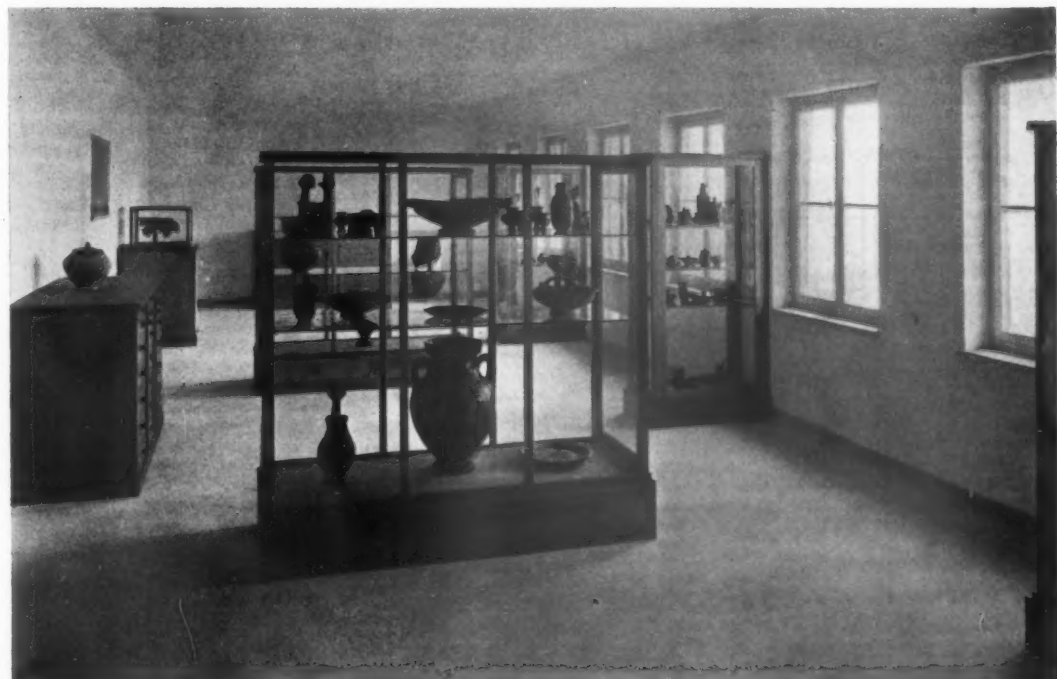


FIG. 2. — KERAMEIKOS MUSEUM. GALLERY WITH ATTIC POTTERY
(Courtesy of Mr. Kübler)

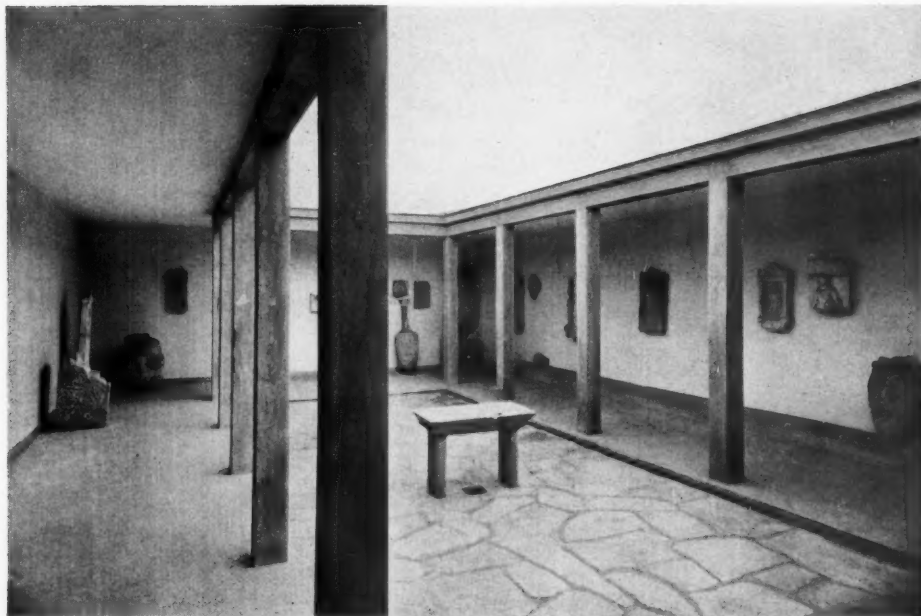


FIG. 3. —KERAMEIKOS MUSEUM. COLONNADED COURT FOR MARBLE RELIEFS
(Courtesy of Mr. Kübler)



FIG. 4. —KERAMEIKOS MUSEUM. SCULPTURE HALL, SHOWING POROS STELE OF MAN WITH SWORD AND STAFF, LIONS IN MARBLE AND POROS, SEATED MARBLE FIGURE AND HORSEMAN
(Courtesy of Mr. Kübler)

cently the location of the seats of the judges or Hellenodikai has been established, on the south side of the Stadion not far from the starting line. The seats themselves were apparently of wood, but rested on a well cut marble paving. In addition to the work in the Stadion, digging was carried out on the site of the Gymnasium, where fragments of inscriptions and of bas-reliefs were found, as well as the headless torso of a statue of Apollo from Roman times. This is more than life size and resembles the Cassel Apollo. Built into a wall was another Roman statue of a woman smaller than life size, also headless. She is represented as seated on a throne, clothed in a tunic and holding a bird on her right knee. Four fragments of a third statue, when joined, form half of the lower part of a figure draped in a himation with heavy folds, falling above the left foot. This may be part of a statue of Zeus. Fragments of bronze tripods and a lion's paw in bronze have also been recovered.

Further clearing in the Altis itself has brought to light new evidence for dating some of the buildings, as well as producing valuable new finds. The South Stoa formerly assigned to the Hellenistic period has now been proved to have been erected in the fourth century and restored in Roman times. Various architectural fragments have been collected and a portion of the Stoa set up in its original position, giving an excellent idea of how this huge Doric structure once appeared. Only the Temple of Zeus exceeded it in size. No evidence for the ancient name or original purpose of the Stoa came to light, although other important inscriptions have been found in this region. A bronze plaque, formerly attached to the base of a statue, gives an epigram in honor of an Olympic victor mentioned by Pausanias, Pherias of Aegina, who was victorious in the boys' wrestling match in 464 B.C. A bronze knife inscribed in letters of the fourth century has a dedication to Pan—the first dedication to this god so far found at Olympia, although it is known that he had an altar in the Prytaneion.

Mr. Kunze and his staff also began removing the earth fill above the second great stoa, the "Echo Stoa," which divides the sanctuary from the Stadion to the east. At a considerable depth in the undisturbed layers below the Stoa many bronze dedications of the eighth and seventh centuries were found. Among these was the greater part of a breastplate, several Corinthian helmets, a very fine protome of a lion and a Protocorinthian relief with a heron, two griffins and two

sphinxes. These objects were found with quantities of bones and ashes.

The British School at Athens undertook several excavations in 1938 on various Greek islands. The Director, Mr. Young, with the assistance of Mr. Brock, "carried out a short final excavation at Kastro in Siphnos in May and June. They cleared the remainder of the area on the Acropolis in which the seventh-century deposit was found last year, but obtained very little more from it. Below it, however, they came upon a well preserved Geometric house, built into a crevice of the rock, and similar to the houses found in previous years on other parts of the hillside. A portion of this house had been exposed in 1937, and it was hoped at the time that it would prove to be the temple contemporary with the deposit. It is now, however, clear that the temple must have stood on higher ground to the south, where the rock is practically at the surface. The steep northeast slope below this area was also thoroughly excavated, but produced very little.

"Further sections of the marble acropolis wall were cleared, and its whole course traced. It runs in places through modern houses and churches. The area within this wall forms a rough parallelogram, about 99 m. x 33 m.

"A fine Geometric steatite seal was acquired locally and presented to the National Museum at Athens. It is very similar in style to the three-sided seal found in 1935 and to the alabaster signet-ring found last year. All three gems appear to be of Siphnian origin.

"At Knossos during the latter half of January 1938 a small Roman mosaic floor, some 5 m. square, came to light southeast of the basilica. The central medallions of the mosaic had been damaged beyond reconstruction, but the triple cable encircling them and the conventional border were well preserved. The scanty pottery associated with the mosaic was more Hellenistic than Roman, but the mosaic itself probably belongs to the early Empire. Some elements, such as the triple cable and the pelta, look late, though less unequivocally late than the quadruple cable and the running pelta. An early feature, however, is the line of small so-called "beltic knot". The design as a whole resembles closely a floor at St. Albans dated about 160 A.D., and it seems not unreasonable to assign our mosaic and the house to which it belongs to the second century A.D.

"A well lying immediately west of the façade of the "Unexplored Mansion" behind the Little

Palace was also cleared. The upper metres of the well were choked with an abundance of Hellenistic pottery, chiefly small cups. As the water-level was approached the Hellenistic pottery decreased and a quantity of tiles mixed with some archaic pithos sherds appeared. The date when the well was first sunk is still obscure. All that can be said is that it must lie between 1400 and 600 B.C.

"Surface finds were numerous, but, with one exception, not important. There was the usual crop of small Roman coins and Minoan beads. The interesting find, from the east slopes of Monasteriako Kephali, was a fragment of a conical rhyton in steatite, similar to those from Hagia Triada, with a design in low relief showing a building with a portico on a steep slope, surrounded apparently by cypresses. One stone of the terrace wall supporting the porch appears to have a mason's mark. It is tempting to suggest that we have in this fragment a contemporary illustration of one corner of the 'Palace of Minos'!"¹

In November a new tholos tomb (fig. 5) was discovered by peasants on the crest of Kephala, south of Isopata. The Curator of Knossos, Mr. Hutchinson, with the assistance of two of the students of the British School, has just completed its excavation. As there has not yet been time to make a detailed study of the material, only a provisional report is now possible. The tomb had been plundered in antiquity, but the excavators succeeded in recovering some debris from the earlier burials and a great many bones and sherds of the latest Minoan period, when the tholos appears to have been used as an ossuary. From the earlier burials came a bronze knife, a fragment of ivory, a stud and rosette of gold, a few beads and a piece of a stone mould; from the later period there are several complete or nearly complete vases.

Architecturally the tomb is of great importance as it is the first Minoan tomb closely comparable to the Helladic tholoi of the mainland. As compared with the latter its dimensions are small, the diameter of the tholos being just over 5.50 m. and the width of the forehall and dromos only 1.00 m. The forehall corresponds to the doorway of the mainland tholoi but since there are narrow side chambers to the north and south, it recalls the arrangement in the Royal Tomb at Isopata except for its roofing, which is not corbelled. The dromos appears not to have been walled at first,

¹ For these reports, I am indebted to the Director, Mr. Young.

as its side walls do not bond with the forecourt and are made of re-used blocks. Its entrance was cut off by a wall of enormous uncut stones.

The masonry of the tholos was good ashlar work in limestone, the stones and courses varying in size and height, but great care was taken with the curve of the dome and even the inner face of the door jambs were cut to fit this curve. One stone in the south wall of the forehall and another, fallen from the tholos roof, bore the trident as a mason's mark. Still more interesting was an incised inscription on the south jamb of the entrance consisting of two Minoan letters set *en échelon* (fig. 6).

The tholos contained four pits (fig. 7), of which three were deep and rectangular and had been closed by stone slabs, while the fourth was shallow and shaped like a bath. It appears probable that this tomb had been constructed in the time of the later Palace of Minos and continued in use until the very end of the Minoan period.²

In the summer of 1938 the British School at Athens carried out its third season of excavations in the mountainous region of Dikte (the modern Lasithi) in Crete.

"A large section of the Early Iron Age city on Karpfi was cleared. In 1937 the temple on the saddle had been excavated and a number of cult figures, two of which were reproduced in this JOURNAL (*AJA.* xli, 1937, pl. XXI), were recovered.

"This season in the hollow immediately below the temple a large house was excavated, which, from its size and position, must have been that of the ruler of the city. It is in a remarkable state of preservation. Some of the walls remained standing to a height of nearly three metres. In plan it is a megaron, a forehall leading into the megaron proper, which contained a hatchway—no doubt the *δρσοθύρη* of Homer—leading into a store-chamber. The roof had been supported on two columns and considerable traces of it were found, sufficient to show that it was flat—in the Minoan tradition. It was in fact exactly similar to the roofs of the modern villages, even to the layer of waterproof earth, *λεπίς*, which covered it.

"Two other complete blocks of buildings were cleared, as well as a row of what seem to be guard houses, protecting the steep pathway which leads up to the city from the north.

"Two groups of tholos tombs were examined,

² For this report I am indebted to Mr. Hutchinson.



FIG. 5.—KNOSSOS. THOLOS TOMB. ENTRANCE AND FOREHALL OF THE THOLOS FROM WITHIN
(Courtesy of Mr. Young)



FIG. 6.—KNOSSOS. INSCRIPTION FROM THOLOS TOMB. THE FIRST OF THE LETTERS RESEMBLES LINEAR SCRIPT B TYPES RATHER THAN THOSE OF LINEAR SCRIPT A
(Courtesy of Mr. Young)



FIG. 7.—KNOSSOS. THOLOS TOMB. VIEW SHOWING UNUSUAL ROOFING WITH TRAPEZOIDAL SLABS SET ON EDGE AND GRAVE PITS
(Courtesy of Mr. Desborough)

both contemporary with the city. Like those excavated last year, they were free-standing, the vault being surrounded with a heavy block of masonry. Interment must have taken place through the roof, since the doorways are usually too small to have admitted the introduction of a body.

"Finds, other than clay vases, were comparatively rare in the city, since it is clear that the site was peacefully deserted when conditions became easier at the beginning of the Geometric Period, i.e. ca. 900 B.C. The inhabitants took with them most of their valuables, and there was no violent catastrophe which would seal in deposits. The most important is the altar of painted clay here shown (fig. 8). It is in the form of a shrine, windows and pillars being shown. On one side the



FIG. 8.—PAINTED CLAY SHRINE FROM KARPFI, CRETE
(Courtesy of Mr. Pendlebury)

"Horns of Consecration" appear in the round and they are repeated several times in paint. On the shoulders were squatting figures of animals, perhaps bulls or stags. It is in the tradition of a long line of Minoan altars, beginning in M.M. II.

"Such bronzes as were found were admirably

preserved. Besides sickles, knives, chisels and simple fibulae was found a fine votive double axe of a shape unknown in Crete but comparatively common later on the mainland and in Ithaca. With it were found the tops of two vases in the shape of human heads and a curious ring-vase with three spouts in the shape of bulls' heads similar to earlier Minoan rhytons.

"Most of the pottery is as yet unsorted, but it is clear that while many of the shapes are those connected usually with Protogeometric pottery, yet the patterns are one and all Minoan. The technique is that which appeared at the very end of L.M. III at Mouliana and the Diktaian Cave—solid blocks of paint, fringed with short lines.

"From a study of the remains it is clear that we have here to do with a city of refuge, inhabited by people of Minoan stock striving to keep their independence against the invaders—probably the Dorians. It also seems clear that to such a period neither of the usual labels, Protogeometric or Subminoan, should be applied. It would be preferable to term the *period* Intermediate—on Egyptian analogies—and to keep the other two terms to describe *styles*."¹

"Miss Benton continued her excavations in Ithaca during the summer. At Aetos she discovered the foundations of a large building, probably of an agora built in the fifth century, which overlies the foundations of a temple, destroyed perhaps in the fifth century, for a large late Protocorinthian oenochoe lay crushed on the stone fallen from the temple wall. The oenochoe has two animal friezes; on the base is a horse's protome in outline. Beneath other fallen stones were fragments of amber and bronzes. The most interesting of the latter is a miniature lebes with griffin's head on a stand.

"The temple had interrupted an apsidal building and lay partly on an early Geometric layer, which included a primitive bronze figurine, partly on a Protogeometric deposit. Some of the vases in these deposits seem to be transitional between the two periods. To the south, lower down the hill, lay first a hearth connected with Protogeometric pottery and then another foundation differently orientated, below a layer of terracottas. Beside these was an archaic terracotta altar, painted with Dionysiac donkeys; below and around were groups of vases ranging from bowls of a Protogeometric character to a fifth-century lekythos. Grouped

¹ For this report I am indebted to the excavator, Mr. Pendlebury.

with the vases were iron spear-heads, bronze horses, an archaic bronze goat on a spout, bronze vases and fibulae, ivory seals and fibulae. These miscellaneous groups of vases in black earth had in parts impinged on a deposit of linear Geometric vases in grey clay, which lie to the south of the last-mentioned foundation. Corinthian vases were plentiful both on this spot and in a deposit at some distance, where there are house remains and an ancient terrace wall.

"At Tris Langadas near Stavros Miss Benton completed the excavation of the Mycenaean site, recovering much pottery, but no house plan. In the neighborhood she discovered a rectangular foundation containing Mycenaean pottery of the same style as the larger site; also three apsidal buildings overlapping one another, the earliest being very well built.

"In the plain of Kampos at Polis she cleared the remains of a furnace of Roman date, containing a number of large amphorae."¹

A long-felt gap in our knowledge of prehistory in the northeast Aegean has been filled by Miss Eccles' trial excavations at Agio Gala in Chios on behalf of the British School. "Two caves in a rocky cliff are connected by a passage, down which a mass of neolithic material had fallen from the upper into the lower cave. This was first cleared. A section of the upper cave was then cut and analogous pottery and flints were found clearly stratified beneath three meters of Bronze Age material surmounted by Protogeometric, Hellenistic, and Roman remains. The material shows connections with Thessaly during the neolithic period and with Anatolia during the Bronze Age."²

Considerable new material for the study of the prehistory of Anatolia has been uncovered on the town site of Kusura, which lies southwest of Afyon Karahisar in a part of Anatolia little explored by prehistorians. Miss Winifred Lamb of the British School, who after finishing her work at Thermi in Lesbos, has conducted three campaigns at Kusura, reports that "during the third millennium B.C. this town was inhabited by a community the culture of which had much in common with the so-called West Anatolian group. Some objects found at Kusura could, however, be paralleled in Eastern Anatolia, and appeared to indicate that the division between the two cultural zones was

less abrupt than had been supposed, being merely the result of independent development on peoples of kindred stock.

"The architectural remains of this period at Kusura were well preserved, and houses had been found, arranged on either side of a street, with walls standing in some cases over three metres high. The pottery showed the skill with which local craftsmen introduced variety into their monochrome wares by means of plastic decoration.

"After a disturbed interlude, when part of the settlement was destroyed, about 2000 B.C., a new race appeared. The town was rebuilt and its citadel enclosed by a double wall with a gateway on the west. The newcomers were related to the people who formed the main bulk of the population at the chief Hittite centres—Bogazköy, the capital, Alishar, and Alaça—as could be learned from a study of their pottery, idols, and implements. This culture had not previously been found so far to the southwest, and its presence might throw some light on the difficult ethnological and historical problems of the second millennium."

In Naxos, the Ephor, Mr. Karuzos, assisted by Mr. Kondoleon, excavated in 1937 a necropolis which had been discovered by the chance find of fragments of a very beautiful orientalizing amphora representing Aphrodite accompanied by another divinity, on a chariot drawn by winged horses. The tombs here produced very fine sherds and figurines of the Geometric Period, of vases of the orientalizing style and of later periods. On a hill to the north of the town had been found not only quantities of Geometric and archaic sherds but votive offerings in bronze, terracotta and marble, among them the legs of an archaic Kore in Naxian marble and a female figurine in terracotta belonging to the beginning of the sixth century, all testifying to the existence of a sanctuary in this region.

Chance finds on the island of Skyros also led to the discovery of a necropolis near the shore of the river Kephissos. This was excavated by Mr. Stavropoulos and found to have been in use from the Mycenaean age through the Geometric period. More than fifty vases, necklaces, rings, fibulae, and bracelets of bronze were recovered, as well as a few objects in gold.

The French School at Athens carried on excavations in 1938 at Delphi and at its ancient port, Kirrha; in Crete, in Delos, and in Arcadia. At Delphi four trenches were dug at different

¹ This report was given me by Mr. Young.

² For this summary I am indebted to Miss Eccles.

points in the sanctuary of the Pythian Apollo, which have provided a fine series of new material supplementing and confirming or correcting the results of the earlier excavations in this region. Some of the most noteworthy of the new finds were a fragment of one of the Caryatids from the Cnidian Treasury, the torso of a wounded warrior from the pediment of the Treasury of the Athenians, a piece of the round altar in Marmaria, numerous remains of archaic monuments with the colors well preserved, several decrees which can be dated, a new inscribed block from the great polygonal wall and one from the Treasury of the Athenians, as well as many bronzes and vases, particularly valuable for the study of the Geometric and Archaic periods.

The destruction caused by the cloudburst of December, 1935, has been repaired. The great retaining walls of the terrace for the temple, the polygonal wall with its inscriptions, and its retaining wall have been reset. The foundations of the temple itself have been restored up to the stylobate. At Marmaria three columns of the celebrated marble tholos have been set up, as well as the entablature and a part of the wall of the cella.

The excavations at Kirrha have identified the dockyards of the port with their ship sheds and have recovered from the site of the prehistoric town a great number of complete vases, as well as a bronze dagger with an ivory pommel and a small votive terracotta anchor belonging to the Early Helladic Period.

At Delos supplementary work was undertaken in the Dodecatheon. In 1937 M. Robert had made investigations in the region west of the Archegeion found in 1935, which seem to indicate that the empty region between it and the lake had been used as a Hippodrome. The little marble temple near the lake appears to have been that of the *archegetis* Anios. A trench run from the west wall of the Hippodrome down to the edge of the lake near the temple of Anios, uncovered a large sanctuary, consisting of a large paved hall with stuccoed altars, and a place for ritual ablutions. This hall was bordered on the west and south by a gallery, paved with mosaic, showing a mutilated inscription with what appears to be the name of Apollo. M. Robert also cleared the building with the marble peristyle near the house excavated by M. Coupry in 1935-1936.

In the course of his methodical study of the Parthenon for his revised and detailed publication of this building, Mr. Gorham Stevens discovered a valuable piece of a decree concerning the Athenian tribute. It is part of a marble stele which had been cut and used to repair the lower part of the south jamb of the east door of the Parthenon. The fragment shows forty-three lines of the left side of the inscription and appears to belong to the same stele as another fragment¹ which was carried off by Lord Elgin and is now in the British Museum.

ELIZABETH PIERCE BLEGEN

¹ *IG. I* 2, 66.

EXCAVATIONS IN SAMOTHRACE

A brief campaign of trial excavations on the island of Samothrace was carried out by the Archaeological Research Fund of New York University from late June to late July, 1938. The trials aimed at establishing basic evidence for future methodical work of excavation and research. At the beginning of this report on results of the preliminary work, which have in their importance exceeded our best hopes, I wish to extend thanks to those who have in various ways facilitated our work.

The enthusiastic and generous donors who have given the financial means of establishing the Archaeological Research Fund, and who prefer to remain unnamed, have laid the foundations for present and future work. The Greek authorities have given their full support, and in this respect we are especially thankful to Professor G. Oikonomos and Dr. Sp. Marinatos. Mr. J. Kondis, in charge of the antiquities of the islands, has contributed his very valuable assistance and, to our great pleasure, has taken active part in our work during most of the campaign. The officers of the American School and Mr. Lincoln MacVeagh, American Minister at Athens, have given generously of their time. Professor T. L. Shear volunteered generous coöperation and we are especially indebted to him for the assistance of a well trained and efficient foreman of the Agora staff, Georgios Nikolaides. Mr. A. H. Hill of the American Express Company in Athens and his staff have helped us with expert counsel in practical matters. The staff under my direction, composed of Mr. and Mrs. Edward L. Holsten and Miss Phyllis Williams, students of archaeology at New York University, has with admirable energy under difficult conditions enabled me to carry out a programme of relatively considerable size.¹

¹ This report is the result of such close coöperation that it is impossible to define the contributions by the various members of our group. My signature means only that I bear the responsibility for what is said here, but the report itself is the result of the common work. Mr. S. Shaw, who plans to join us as architect in future work, has made valuable contributions. Plans have been skillfully drawn by Mr. G. Kokins of New York. Dr. J. Oliver has kindly added valuable suggestions with regard to the epigraphical material.

The island of Samothrace, the "Delos" of the northern Aegean, is today less accessible than any of the larger Greek islands. This inaccessibility has contributed perhaps to the comparative absence of methodical investigation, which began only after the casual discovery of the famous Victory, with a subsequent French expedition in the sixties of the past century,² and the two Austrian excavations³ in the following decade. Subsequent research by archaeologists of various countries has supplied here and there additional data, some of the material having been published in part and some of it remaining unpublished. With the exception of a few fruitless trial digs in the ancient town by the first French expedition, methodical work has been confined to the sanctuary of the Kabeiroi, which is situated near the town to the southwest (fig. 1). There, too, former excavations have left large areas untouched, without uncovering earlier strata. This situation is very striking in view of the great fame of the sanctuary in Greek and Roman times and the considerable importance of the town in at least some periods of antiquity. Methodical excavation, which in recent years has been repeatedly urged by prominent scholars,⁴ seemed, on the other hand, to offer promise, in view of the deserted character of the whole main archaeological area.

The once world famous sanctuary of the Kabeiroi ranked among the Greek mystery sanctuaries next to that of Demeter of Eleusis, with which it constitutes the principal source for Greek mystery religion and its related art. Furthermore, the enigmatic character of the religion of the Great Gods of Samothrace, discussed for centuries, is more obscured by the written sources than any other of the mystery cults. The nature of the cult can be revealed only by excavation. Former excavations had already indicated here too a chthonic

Mrs. I. Varucha has greatly obliged us by painstaking investigations and identifications of our numismatic finds.

² *Journal officiel* 1867 (27, V), p. 635; *Arch. Miss. Scient.* 2, sér. 4, 1867, pp. 267-278.

³ A. Conze, and others, *Archäologische Untersuchungen in Samothrake*, I-II, Wien, 1875-1880.

⁴ O. Kern, *RE. s.v. Kabiren*, p. 1401; H. Thiersch, "Pro Samothrake," *Sitz. Ber. Ak. d. Wiss., Wien*, 1930, pp. 1-65.

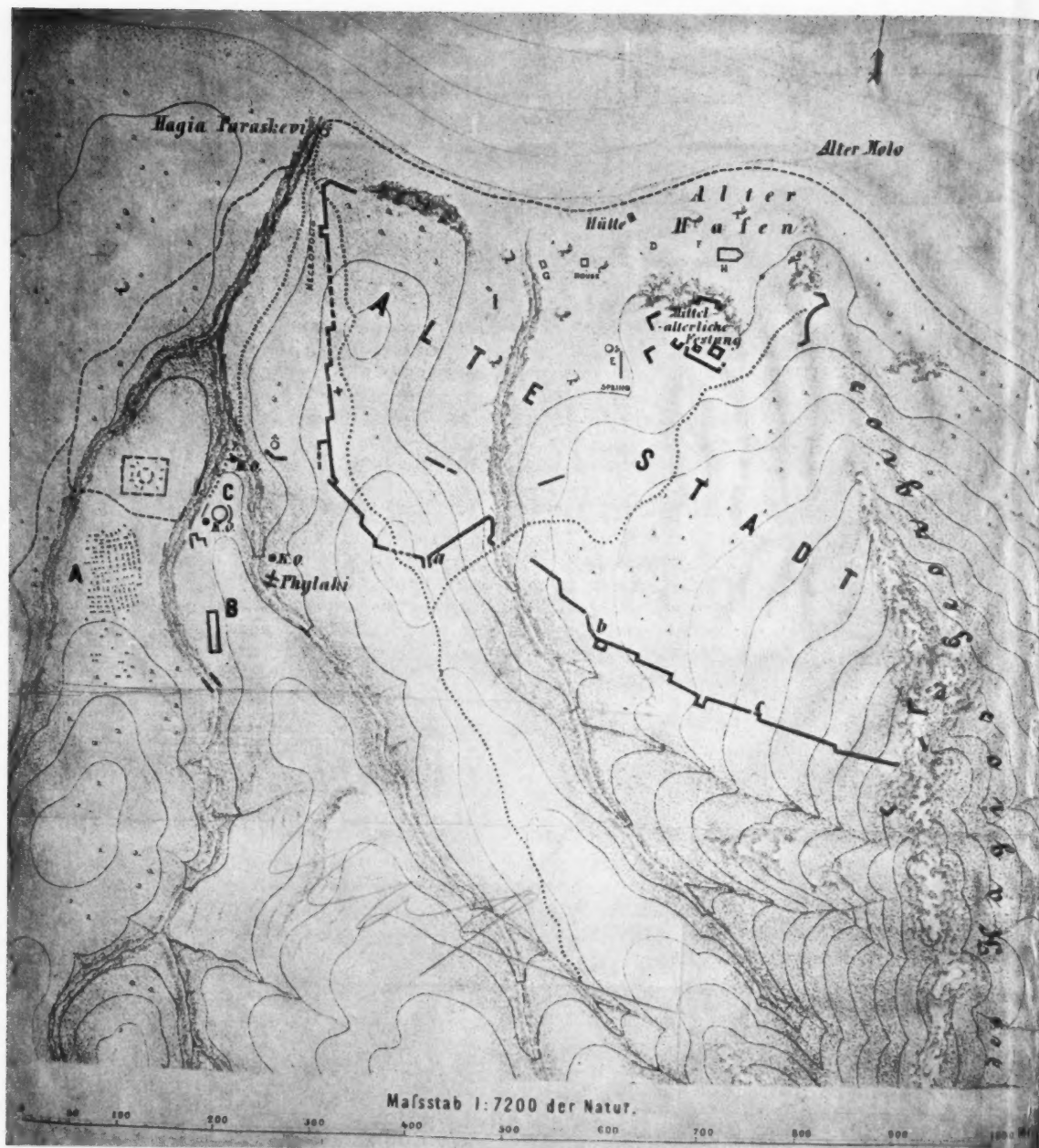


FIG. 1.—SAMOTHRACE. GENERAL PLAN

element in the cult, as well as the unusual architectural features of the two temples, and a well known Hellenistic round building (fig. 2). All these reasons will make the area of the sanctuary the main object of excavations on the island until it has been thoroughly explored.

Last summer our principal effort was concentrated in the region north of the circular building, the so-called Arsinoeion, in order to search for important ruins in the corner between the two rivers which limit the main part of the sanctuary. It seemed natural to assume a development from this region and a gradual extension to other parts. Strangely enough this topographically well defined part had not been touched by former excavators. On the other hand, the aspect of this region, densely covered with brush and trees, gave no clue to the existence of buildings. Only a few polygonal stones, which later proved not to be in their original position, suggested the existence of ruins. We cleaned an area of about 130 square meters ca. 25 m. north from the Arsinoeion and discovered here the ruins of a building of considerable size, which once played an important rôle in the Samothracian cult.

About half of the probable area of this building was uncovered during this season. It is erected on the steeply falling western slope and oriented exactly north-south, with the entrance probably on the southern side facing the Arsinoeion. The shape is nearly rectangular (fig. 3). It is surrounded by carefully constructed polygonal walls of 84 cm. thickness. They are best preserved on the east side (fig. 4), where the lower part joining the highest ridge between the two rivers has the function and character of a terrace wall. The western part of the north wall and the west wall are largely destroyed. Telluric events have caused a considerable slant of walls and foundations following the direction of the slope. Part of the west wall bends slightly toward the interior, probably because of the natural configuration of the ground. From the long walls project rectangular pillars of 80 cm. width and 46.5 cm. depth on the east side. On the west side the corresponding pillars have various depths of projection, so that their faces remain parallel to the main axis. The pillars are carefully built in square blocks, although contemporary with the joining polygonal walls. This building, which can be dated about 500 B.C. by the finds in foundation ditches and the character of the wall construction, was certainly covered, as the numerous roof-tiles reveal. The interior was

probably divided into two aisles by one row of wooden columns. A marble base of slightly oval shape (52 x 47 cm.) and of a form surviving from Mycenaean tradition was found in a fill beneath the later pavement and may belong to this structure. The roof may have been a hipped roof, since half pillars, now broken away in the northeast and northwest corners, and fragments of polygonal roof-tiles would be best explained in this way. The building had a stamped earth pavement, which belongs to an earlier structure, as is shown by its destruction along the archaic walls. To this earlier building can possibly be ascribed the fragment of a polygonal north wall at a slight distance north of the late archaic north wall. The date of this earlier structure cannot yet be ascertained, but it shows already a peculiarity which remains characteristic of our building throughout its whole history—a difference of the pavement levels, which are always higher in the northernmost part of the building. The difference in these earlier periods amounted to 57 cm. The higher rear part of the hall must have been reached by wooden steps from the main part. This arrangement was preserved throughout the fifth and fourth centuries after new pavements of stamped earth had been laid out in a third phase (probably in the later fifth century) on a considerably higher level (68 cm. in the main hall, 51 cm. in the adyton, reducing the difference to 40 cm.). White stucco of excellent quality covered the walls and pillars and is partly preserved from this period. Its existence on the east wall in the region between the two pavement levels shows that no cross wall separated the adyton from the main part in earlier times. The former was indeed only a stage-like, raised platform, closed toward the hall, possibly by curtains or a wooden partition. A tremendous catastrophe, probably an earthquake with subsequent fires, the traces of which can be recognized here as elsewhere in the sanctuary, largely destroyed our building in the second half of the fourth century B.C. After this, it was restored in the early Hellenistic period. New pavements of stamped earth were laid out on a fill of debris containing fragments of the earlier building, roof-tiles, masses of glazed and local coarse pottery, and lamps of the fifth and fourth centuries, as well as votive gifts of various kinds.

The difference between the second and this third earth pavement amounts to 17.5 cm. in the main hall and 39 cm. in the adyton respectively. In other words the rear part was then, and re-



FIG. 2.—KABEIRION. PLAN

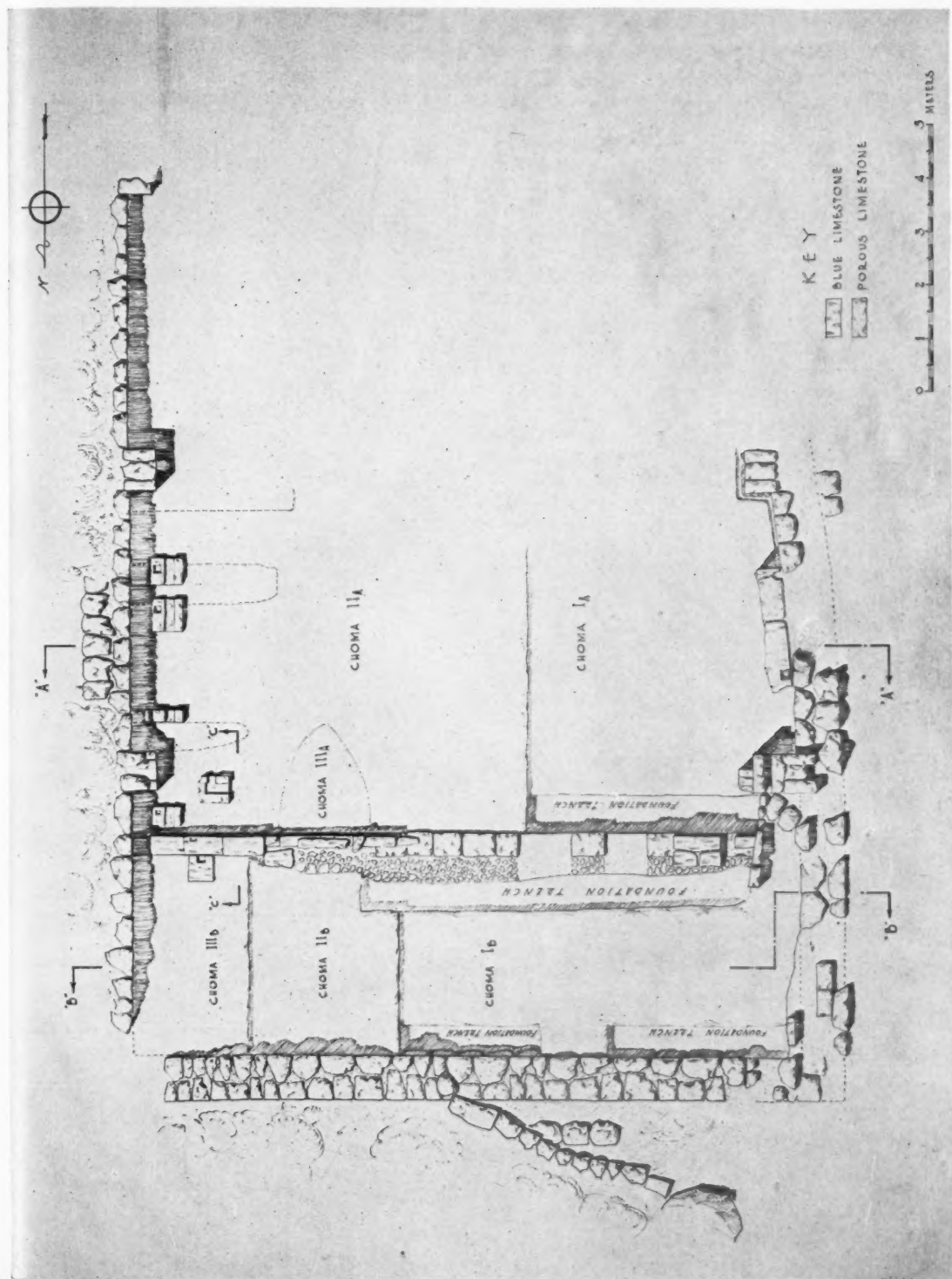


FIG. 3.—ANAKTORON. PLAN

mained from that time on, 62 cm. higher than the main hall. In all other respects the original plan of this restoration aimed at preserving the traditional features. On a foundation of poros blocks, a terrace wall of orthostates and low, slightly projecting blocks of hard red limestone was erected (fig. 5). It supports the higher pavement of the adyton and faces the main hall. Its foundation is preserved throughout the whole width of the building and the wall itself survives in the eastern and part of the western section. During this building period plans were changed: the foundation was strengthened by irregular stones at the north side in order to support a dividing wall pierced by two doors in the western part. The thresholds of these two doors, which differed slightly in width, are still lying in the ruin, where they were reused at the western entrance of a poorly built enclosure erected after the final destruction. They are of the same red limestone which is used in the early Hellenistic wall. The doors were approached by wooden steps. At the same time a *Theatron* of wooden benches running along the north, east and possibly south sides, and interrupted on the north side by steps leading to the adyton was constructed around the main hall. Poros bases with horizontal cuttings for the wooden beams, some of them with additional square holes still filled with lead for vertical supports, are preserved in the northeastern and northwestern corners, as well as along the east side of the main hall. In the adyton, a shallow niche was reserved at the east end of its south wall, where a square foundation block with a hole in the center supported some sacred object. The building remained in this form down to the end of the pagan cult. Only a single later change was made, which, however, from the beginning of our excavation had opened our eyes to its great importance for the history of religion and religious architecture. About 200 A.D. an inscribed marble stele, probably replacing an earlier Greek inscription, was set up in front of the pillar between the two doors leading to the adyton (fig. 6). It was discovered at the very beginning of the excavation, a short distance southwest of the doors and face downward, just as it had fallen at the final destruction. Its bilingual text reads as follows: DEORUM SACRA QUI NON ACCEPERUNT NON INTRANT. AMYHTON MH ΕΙΣΙΕΝΑΙ. Then follows an incised kerykeion between two snakes. The great importance of this document, the first cult regulation discovered in Samothrace, is obvious. Originally standing at the pas-

sage from the main to the higher rear part of our building, it is documentary evidence that the building was used for very important and final stages of the initiation. In other words, our building is a Telesterion, which was in use from very early times down to the late pagan period. Furthermore, the inscription explains the division into two parts: the main part was used for the μύησις; the rear part for the ἐκρωψις. In the older periods the stage-like lay-out without a permanent partition may have reflected consecutive action before the community, to which at the end, much as at Eleusis, something was revealed from the rear of the stage.

From Hellenistic times the main part was used as a *Theatron* for the *Dromena* and *Logoi* and then the initiated mystai were allowed to enter the adyton and to see there something not visible before. Of great interest, too, are the incised symbols at the end of the inscription. The kerykeion of Hermes Kadmilos, who is the *administer* of the Great Gods of Samothrace in the ancient sources, shows him as guarding the entrance of their Abaton. The two snakes symbolize the δῖφνες Κάβειροι, who are mentioned in an orphic hymn¹ as assuming the form of snakes. They again point to the chthonic element of this cult.

The building, which apparently throughout many centuries fulfilled the functions of a telesterion and preserved its modest archaic character with only slight secondary changes, represents a new type of Greek religious architecture. The importance of this building suggests that it may even be identified with a building of which we hear in our scant literary sources. As a matter of fact it seems probable that this is the *Anaktoron* mentioned by St. Hippolytos, where two famous bronze images of the Kabeiros stood.² They had been placed ἐν ἀνακτόρῳ, but according to Varro³ *ante portas*, which would exactly fit the plan of our main hall, with the two doors leading to the adyton. The name *Anaktoron*, on the other hand, seems very appropriate for a telesterion, since it occurs in Eleusis too as one of the integral parts of such a building.

The finds from the various strata of the building are very numerous and include every kind of material and objects. A single fragment of a prehistoric vase points to a very early history for the site. The remaining finds cover the periods from

¹ 38, 5-8.

² Hippol., *Refut. omn. haer.* v, 8, 9.

³ *L.L.* v, 57.



FIG. 4.—ANAKTORON. CENTRAL PART FROM WEST



FIG. 5.—ANAKTORON. VIEW FROM SOUTHEAST



FIG. 6.—STELE WITH CULT REGULATION
FROM THE ANAKTORON



FIG. 7.—HAND WITH PATERA. FRAGMENT OF ARCHAIC
STATUE



FIG. 8.—SECTION OF EARLY CHRISTIAN CEMETERY

the seventh century B.C. to the late Roman age. Among the objects which were found above the level of the Hellenistic period, the fragments of a large shield,¹ the circular surface of which was covered with a thin iron slab and which probably was fixed on the east wall of the adyton, are of special interest. To its central decoration may belong a conical bronze object of 7 cm. diameter which was found nearby.² A bronze fragment of jewelry with a fine griffon-head may be listed here. Most of the finds come from the fill beneath the Hellenistic pavement. They are especially numerous, since after the destruction of the earlier building its pavement in the western part was largely dug away and this space then filled up with broken material from the classical period. Remarkable in this mass of finds of the fifth and fourth centuries is the absence of statuettes and even of vases with figured decoration. Mostly undecorated skyphoi, small kantharoi, cups and dishes were found. This may have been due to some cult restriction. Several iron knives, certainly used in the cult, deserve special attention. A few triangular votive objects of clay may have some religious connections.³

It is not yet possible to determine the exact date of the final destruction of the building at the end of the Roman period. After this destruction the area was apparently transformed into an open enclosure, by using the ancient walls in the east and northeast, and reusing ancient spoils in the northwestern and western part, with the entrance in the center of the west side, using the thresholds of the adyton entrances. The area was then given over to agricultural purposes, since we found one of the blocks of the Hellenistic cross wall roughly transformed into an olive press. Three modern terrace walls, starting from the ancient east wall (indicated with dotted lines in fig. 3), have been destroyed by us. At the end of the work we built two buttresses at the inner side of the east wall to prevent damage to the ruins from the pressure of the earth.

¹ For shields dedicated in Samothrace, see the "shield of Aeneas," Serv., *ad Aen.* iii, 287.

² These objects are sometimes explained as *umbones* of shields, sometimes as heads of nails, decorations of doors or cymbals, see: *Olympia* iv, nos. 511-513, 1221, 1222; *Aegina*, pl. 117, no. 18; *Δελτ.* 1915, Parart., p. 30, fig. 33a.

³ The symbol of the female sex? Cf. for the mystic Δ, Dornseiff, *Das Alphabet in Mystik und Magie*, Berlin, 1925, p. 21.

Two minor trial digs were made in the sanctuary (fig. 2). One of them was undertaken in the area between the façade of the Hellenistic and the west side of the "Old" Temple and uncovered the whole structure of the archaic altar, which had been discovered the previous year.⁴ The original structure, of archaic character, closely related in technique to the early structures of Samos, with large square blocks at the corners and smaller stones between, was a rectangle of 1.90 (N-S) to 2.45 m., laid out in a direction different from both the Hellenistic and the "Old" Temples. Thus it probably precedes, chronologically, the latter too. Although its date could not be ascertained, because of the circumstances of the later destruction, it may well be dated in the seventh century. It is laid out on a sterile layer of earth, which in turn covers a mass of fallen rocks. In the fourth century the center of its south side and its whole northeastern part, together with the rear part of the "Old" Temple,⁵ were destroyed by fallen rocks, probably in the same disaster that destroyed the *Anaktoron* in this period. After this it was restored and there was added an irregular pavement (*Prothesis*) of small stones at the north side, extending the whole structure to a length of about 3.80 m. in the north-south direction. The level of this pavement precedes the Hellenistic temple chronologically, and the existence of the whole structure in that place may point to a forerunner of this temple. On the east side of the altar a fragmentary archaic head of island marble, holding a patera (fig. 7), was discovered. It belongs to a statue of life size, possibly the same statue of which a toe had been found the previous year on the other side of the altar. A fragment of a throne found nearby may belong to the same work, although the quality of the marble differs slightly. These fragments may form part of the cult image of the "Old" Temple, destroyed in the fourth century.

The third trial trench, 2 m. wide and extending 10 m. in an easterly direction, from the northeast corner of the Hellenistic temple, aimed at establishing the natural configuration of the ground in this region. The rocky slope of the hill between the two rivers falls steeply from east to west and reaches, about 7 m. from the temple foundation, the level on which this has been placed. From here westward, originally relatively even ground offered natural conditions for the erection of large buildings. In a period which cannot be dated, a road 4.50 m. wide was cut through this rocky

⁴ *AJA.* xlii, 1938, p. 126.

⁵ *Ibid.*

plateau 4 m. from the corner of the temple and running at this point nearly parallel to the building. The surface of this road, with some irregular pavement stones, was uncovered 2 m. beneath the upper level of the temple foundation. The road apparently led from the southern higher part of the sanctuary down to the north part. After the final destruction of the sanctuary this road served for a long period as a natural bed for the winter rains. As a result, masses of stones and debris of buildings, bricks, pottery and all kinds of objects from the upper and surrounding regions of the sanctuary gradually accumulated in the cuttings. The existence of this river bed, and its direction explains the thorough destruction of the southeastern part of the "Old" Temple. The finds date from the fifth century to the Byzantine period, naturally without stratification.

Several trial digs in the town aimed at determining the possibility of future excavation in its lower parts near the sea-shore. Here a narrow plain is traversed in the western region by small brooks, and contains in the eastern part the ancient harbor, now filled with sand. In the former region three trial digs (fig. 1, D, F, G) revealed circumstances which would not allow a systematic exploration without great difficulties, since underground water currents, at a depth of 0.85-1.70 m. beneath the natural soil prevent an investigation of strata earlier than the late Roman and Byzantine period without pumping. Only some walls of modest buildings of this age were uncovered in the two trenches D and F. In the area G on the east bank of the main river, leading from south to north through the town, an area from 11 (N-S) to 5.50 (E-W) m. was explored. This place, still preserving the name of a church, Hagios Georgios, attracted our attention because of some upright poros orthostates, which were visible in a field and turned out to be reused from an ancient building in the fourth of five building periods. These periods all date from the late Roman and early Byzantine age. A complicated network of foundations and enclosure walls of the five periods reveals the existence of a large building, probably a church, the north wall of which was uncovered at the south end of our trench. It has the same orientation as the early Christian graves to the north of it, four of which were well preserved in our area. Three of these four graves are oriented west-east and contained only fragments of skeletons. Two of these graves are built carefully of regular stone slabs with a stone cover of material

reused from earlier buildings (fig. 8). The third grave was built, paved and covered with large tiles, partly *bipedales*. The fourth grave of this period is oriented north-south, with the head placed on a pillow of stone at the north end. It is a child's grave, with a tile pavement and a saddle roof of tiles. In a third period an annex was added at the north of the church and the area paved with tiles. It seems, however, to have continued to be used as a burial place, since a destroyed grave of a fourth period and an enclosure wall at the north end of our trench, both of them oriented differently from the others but parallel to each other, are to be found on a slightly higher level. In the fifth period a wall at 2.40 m. distance from the north wall of the original building was added. Only the relative chronology of these buildings was ascertained. In the fill around the various buildings and graves no stratified layers were preserved, since the graves and foundations of the later stages, having been cut down to the deepest available level, have caused a confusion of strata in a crowded area. The finds in the higher as well as the lower strata contain material from the fifth century B.C. to the early Byzantine period. The first and second periods may date from the later fourth and early fifth centuries respectively. The latest grave seems to be not later than the sixth century A.D.

The many objects in the earth filling around the foundations and graves include fragments of Hellenistic votive statuettes, classical buildings, pottery and coins from the Hellenistic to the early Byzantine period, early Christian lamps, an ivory pyxis without decoration, terracotta weights, a silver ear-spoon, etc. Two inscribed objects deserve special attention (fig. 9): one is a lead slab incised on both sides with eight rays, in the intervals of which on both faces a cross appears and the sequence of the letters $\epsilon\gamma\upsilon\pi\tau\omega\varsigma$. It is pierced in the center and is apparently a cryptogram of the type in which each letter is the first letter of a

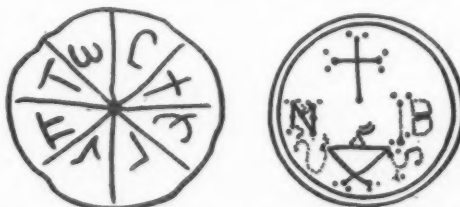


FIG. 9.—EARLY CHRISTIAN LEAD AMULET (LEFT) AND BYZANTINE BRONZE WEIGHT (RIGHT)

word.¹ The second object is a bronze weight (weight 60 gr.), of 3.6 cm. diameter and 0.7 cm. thickness, with sharply profiled edge and concentric circles in the center of each side. One face is filled with an additional carefully punched decoration: a cross at the top, a triangle at the bottom and the letters N and I B (12?) respectively at the two sides. The three trial trenches were filled in again after plans and photographs had been made.

More fertile were our investigations in the eastern part of the lower plain, where the existence of two monumental buildings was demonstrated at the southwestern and southeastern corner of the ancient harbor. In an area densely covered with shrubs some fragments of a very monumental ancient building in hard blue limestone had already drawn the attention of the first French expedition.² The French had apparently removed a large Corinthian capital, belonging originally to an interior corner, without discovering the early Christian church (H in fig. 1) in which it apparently had been reused. The lower part of the church is preserved to an average height of 1 foot above the ancient ground. We have traced this year only the outline of the church, which is a stately building of 24.30 m. length and 13.60 m. width, with only one semicircular apse and possibly a Paratema at the south side. The walls are carefully built, partly of reused material from various classical buildings and they are coated with white stucco. Originally there was only one door in the center of the façade. This was reached from a platform, to which two lateral stairways led from a courtyard paved with tiles. Later modifications have been made here, but the building, constructed apparently in the late fourth or the fifth century, must have been destroyed during the Byzantine period and supplanted by very poor later constructions. Various architectural fragments, among them columns from an altar or *ambon* of the early Christian period, and a fragment of a large bronze candelabrum in the shape of a circular ring, pierced with holes, have already been discovered. Of special interest is a considerable amount of broken window glass, rectangular slabs with thick edges, which must be ascribed to the early Christian or very early Byzantine period.

In the southeastern corner of the harbor (I in fig. 1) we cleared an area of about 40 square meters. A late Roman fountain was found *in situ*,

¹ See Cabrol-Leclercq, *Dictionnaire*, s.v. *acrostiche*; Dornseiff, *op. cit.*, pp. 78, 110, 137 ff.

² *Arch.* p. 271.

at a distance of 7 m. east of a Byzantine fortification wall which contained a number of fragments from a large classical building of Doric style in blue limestone (fig. 10, at the left side in the background). The fountain is a square building of 2 x 1.50 m. oriented N.N.E.-S.S.W. with the outlet at the southwest side and an opening for the water-supply on the larger, southeastern side. It has been built from reused tufa blocks with swallowtail clamp holes.

A trial dig between the Byzantine wall and this foundation (fig. 10, foreground) revealed part of the foundation wall of a large classical building from which these blocks had been taken. The foundation wall is 1.95 m. thick and runs nearly in an east-west direction. Probably it is the foundation of a large temple, to the upper structure of which belong the blue limestone fragments, reused partly in the Byzantine wall, partly in the church at the other end of the harbor. At a distance of only 2 feet to the south and parallel to the foundation, a carefully built clay aqueduct 9 cm. in diameter is well preserved. The pipes are held in position at regular intervals by square stone slabs, each pierced by a horizontal hole. Both aqueduct and foundation belong to the early Hellenistic period, as the rich amount of stratified finds reveals. Among the single objects may be mentioned a fine blue faience pendant, decorated on both sides with a silen head (fig. 11) and an amphora handle, stamped likewise with a silen head. Both monumental buildings at the ancient harbor, the one dating from the Hellenistic, the other from the early Christian period, certainly deserve future investigation.

Finally, we have carried out some work in the upper part of the town, feeling it imperative to rescue endangered relics without delay. In a region where the first French expedition had made a trial dig on the western slope of the hill overlooking the harbor and covered by two mediaeval towers, inscriptions had been found from time to time and partly destroyed by the peasants (E, fig. 1). The upper part of a brick apse of a Roman building emerges here from the soil about 50 m. north of a very fine and copious spring. The inscriptions were said to have been found beneath a path at a slightly higher level leading from the Roman ruin to the spring. A trial dig following this line revealed the existence of a Roman aqueduct, which starts from the spring and runs behind the brick apse toward the north, with pipes carrying part of its supply to the Roman build-



FIG. 10.—HELLENISTIC BUILDING AND AQUEDUCT. ABOVE,
LATE ROMAN FOUNTAIN



FIG. 11.—FAÏENCE PENDANT WITH MASKS OF
SILENUS
(From cast kindly procured by Miss J.
Konstantinou)



FIG. 12.—ROMAN AQUEDUCT WITH HELLENISTIC STELE
RE-USED AS CEILING BLOCK



FIG. 13.—ASKOS OF YELLOW GLASS



FIG. 14.—BRONZE ARYBALLOS

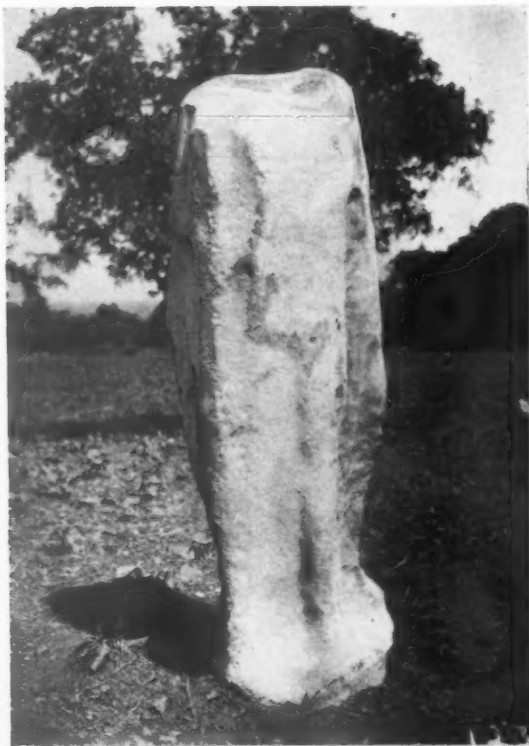


FIG. 15.—MARBLE STATUE FOUND IN RIVER BED

ing. The aqueduct itself (fig. 12) is a channel of rectangular section, built in concrete and coated with hydraulic stucco. It has a width of 23 cm. and a depth of 22-29 cm. in the section excavated this season, which was ca. 20 m. long. The channel was covered apparently in its entire length with reused Hellenistic marble stelae, only two of which we found *in situ*, the others having been removed before by casual discoverers. The stelae were brought here from the sanctuary of Athena, the patron of the town, whose temenos contained the archives. They are of Thasian marble and very much destroyed by weathering and water. One very large stele shows no traces of an inscription and seems to have carried a painted document. Another is preserved in two fragments in its entire length of 165.5 cm. It contains the badly destroyed traces of a decree of 67 lines, referring to some kind of contribution to an *ἐξοδος*, for which a great number of men are honored.

A third fragment has preserved only a few traces. A fourth stele (the upper part of which is preserved) contains an honorary decree and reads:

Ἐδοξεν τῇ βουλῇ| ὁπῇ | [ἰ]δ[ι]ω[ς] Σωσιφά|νης
Σωκάνου εἶπεν:| ἔπειδῃ Ἐπικράτης Μα|ρωνίτης
φίλος ὦν καὶ| εὐνοὺς διατελεῖ τῇ| πόλει καὶ
χρείας πα|ρεχόμενος καὶ κοινῇ| καὶ ἰδ[ι]οῖς τοῖς
ἐντυγχά|νουσι[ν] | [τ]ῶν πολιτῶν ἐ|ψη[φ]ῖ[σθαι]
τῶι δῆμωι: ἐ|παινέ[σαι] Ἐπικ|ρά[την] [κ]| αἰ π[άν]τας
τούς Μα|ρωνίτας| ἐνδ[ι]ατελοῦ[ν]τας|

The honored man, Epikrates, son of Haliarchos, was Theoros from Maroneia early in the second century B.C. (*IG.* 12, 8, No. 161, l. 13). Since normally the decrees in Samothrace were introduced by the Basileus, the word *ἰδίως* in l. 2 seems to emphasize that the decree was initiated by a private person. After the inscriptions had been rescued and plans had been drawn, the trench was filled up again in order to prevent further destruction of the aqueduct.

Although casual finds had revealed in earlier years the existence of tombs here and there in the region between the sanctuary and the town, nothing was known about the exact situation of the necropoleis. The first French expedition by chance had discovered some tombs near the northwestern corner of the ancient town¹ and the report characterized them as late and poor, though the contents, consisting partly of gold and glass, were taken to Paris. Our attention was drawn to the same region (necropolis in fig. 1) by the casual

¹ *Arch.*, pp. 277 ff.

discovery by a peasant of a tomb, the contents of which, according to rumors, must have been very rich. We purchased for the local museum what was still available, among other things a large bronze jar and decided to make a trial dig. This revealed the existence of a very extensive Hellenistic necropolis, on a narrow terrace between the city wall and the steep slope of the ravine north of the sanctuary. A dozen tombs were uncovered. They are mostly oriented northwest-southeast, with the head at the north end and the lower part cut out of the rock. They are paved and covered with roof-tiles, which number from three to five layers in each case, in slightly arched formation. Sometimes a heap of irregular stones was laid over the tombs, sometimes a regular layer of square stone slabs. This construction, together with earthquakes has caused terrible destruction of the tombs, so that in some cases almost nothing of the skeletons was preserved, while the contents were dispersed over the surrounding area. What is left, however, is still of considerable richness and interest. Among the finds may be mentioned clay vases, lamps, coins, iron strigils and especially glass. We reproduce here a beautiful asks of yellow glass (6.8 cm. high, fig. 13), and a *unicum*, a very fine bronze aryballos (5.5 cm.h., fig. 14), with incised tongue pattern. It can be dated from other finds in the third century B.C.

The finds were stored provisionally in a house near the sanctuary and with them we put sporadic finds of various kinds, which we felt should be secured for the future local museum.

A considerable amount of material, especially architectural fragments, pottery, glass and metal objects have been collected there. Among the sculptural fragments may be mentioned a badly damaged female statue of island marble of life size, which was discovered in the western river bed, near the point where the two rivers of the sanctuary unite their courses (fig. 15). It had apparently fallen here from an upper part of the sanctuary and the surface has been terribly worn by long centuries of erosion. It still preserves, however, the noble outlines of a *peplophoros* of the transitional style and of the Nesiotic-Ionian school. The back is only roughly worked, so the statue may belong to an architectural decoration.

Beside the inscriptions from our excavation, which have already been mentioned, a group of early Hellenistic stamped roof-tiles deserves attention. The left part of two, one from the sanctu-

ary, one from the Hellenistic temple near the harbor, is preserved: I E P A. Part of a third comes from the *Anaktoron*: . . . ΩΝ, apparently the end of Θεῶν. All three belong to slightly different types, but they reveal the existence of an extensive public manufacture of tiles for the sacred buildings in Samothrace.¹ A Rhodian amphora-handle . . . ΙΩΝΟΣ and another with a rose and fragments, . . . ΑΝ . . ., of the surrounding inscription were found in the lower town.

Among the inscriptions purchased from private owners in the modern village I shall mention only two. One is the upper left corner of a stele, decorated with a pediment, containing the beginning of a catalogue of mystae: Ἀγοσθῆ [τύχη] | M(arcus?) S(ergius) L(e)na | Ponti(ano) | M(arco) An(tonio | Rufiano | cos) . . . (131 S.D.). Mrs. Holsten has discovered that the other fragment from approximately the same period is the upper right hand corner of an often discussed document.² The first part of the inscription, which has aroused special interest because of its initial formula, can now be read as follows:³

- 1 <Regibus Iov[e] et Minerv[a]
<iterum, M(arco) Acilio
124 A.D. <Glabrione) [C(aio)] Bellicio
<Torquato cos(ulibus)) mystae pii
5 <[s]acra acceperu[n]t V idus Novem-
br[es]
<. . . . us Sardus Va[r]ius Ambibulus
Prote[us]

¹ Cf. especially Megalopolis and Lykosura: *Excavations at Megalopolis*, pp. 140 ff. A tile from Samothrace: *AM.* 1895, p. 233.

² *CIL.* iii, suppl., 7371; *IG.* xii, 8, p. 39.

³ The parts known already are included in <[brackets].

<A ae Mac[e]doniae
<. us Ie)ron C(aius) Ercu-
(lius) eiusdem.

In line 7 the Ethnicon of the town of Macedonia has to be restored in the first part. The main interest of the new fragment is that it preserves in the first line the name of the deity associated with Jupiter. Former restorers had suggested "et Augusto" (Hirschfeld, Fredrich), "et imp. n." (Hirschfeld), "et Herma" (Domaszewski, Bernays), "et Iunone" (Mommsen). Now we have, instead of all these, Minerva sharing with Jupiter, in place of the local Basileus, the administration of Samothrace. The possible explanations of this seem to be three in number. It is not impossible that Jupiter is here only a disguise for the divine emperor, who seems to have been worshipped in Samothrace too as Olympius, and that he was associated in the cult with Athena, the city patron in her sanctuary in the town.⁴ Mommsen thought the divine couple would be a likely combination for the Samothracian deities. As a matter of fact, Roman writers have identified the Great Gods with the Capitoline triad, including Jupiter and Minerva. Finally, the possibility exists that the sanctuaries of the town (Athena) and of the Great Gods (Jupiter) shared the responsibility.⁵

KARL LEHMANN-HARTLEBEN

NEW YORK UNIVERSITY

⁴ This was the idea underlying the proposals of v. Domaszewski and Bernays. Cf. Fredrich, *IG.* xii, 8, p. 73.

⁵ Dr. Oliver has pointed out the analogy with Apollo Delphinios in Miletos, who frequently assumes the duties of the Stephanophoros, whenever no private citizen volunteers to cover the expenses.

ARCHAEOLOGICAL EXPLORATION AND EXCAVATION IN PALESTINE, TRANSJORDAN AND SYRIA DURING 1938¹

Despite the continuation of serious political disturbances in Palestine during the year, important archaeological work was accomplished. We mourn the loss of James Llewellyn Starkey of

Lachish, who was murdered by Arab bandits. His staff carried on courageously after his death and completed the season. Since then vandals have destroyed the entire camp by fire.

PALESTINE: EARLY HISTORIC ARCHAEOLOGY

The Pontifical Biblical Institute, Rome-Jerusalem, under the direction of Father Köppel conducted an eighth season of excavations at Tuleilat Ghassûl.² The work lasted from January 1 to March 1, 1938. Further work was done in the eastern half of the 100 by 50 m. section of tell 3, on which attention has been concentrated since 1932. Going down by successive layers of 20 cm. each, the excavations have now reached a level of 3 m. below the top of the mound. In strips A, B, and C, special care was devoted to a large number of animal bones. Most frequent among these are bones of pigs. Remains of wall paintings were again found in layers II and III, but so far nothing like a complete composition has been discovered. Further, a copper hook turned up in an excellent stratigraphic context and was handed over to the Palestine Archaeological Museum for analysis. No tin was found in it. This object once more confirms the view that the term "Neolithic" cannot be applied to the culture of the Ghassulian settlement. It should be qualified as "Middle

Chalcolithic," on the assumption that Megiddo V-VII, Beisan XV-XVIII, and Jericho VIII represent the upper Chalcolithic.

Additional information is now available besides that published last year in this JOURNAL,³ with regard to the excavations carried out at 'Affûleh in the plain of Esdraelon in March, 1937, by Dr. E. L. Sukenik on behalf of the Hebrew University. The excavations were near the water-tower by the railway station. When the foundations for this tower were dug in 1931, some grey burnished sherds were found.⁴ Pits sunk in the vicinity during 1937 revealed the presence of a Chalcolithic settlement. This settlement subsequently moved to the present tell, situated near the Jerusalem-Haifa road. The older site was then used as a necropolis, and as time passed, tombs from various ages were dug in the earlier deposits, which were consequently much disturbed. An undisturbed, stratified area, however, was found on the tell. There the excavations revealed under the grey burnished ware a number of Tuleilat Ghassûl sherds in a stratum which reached down to virgin soil. Above this stratum were two floors made of black beaten earth, one above the other; on the lower floor was a hearth, bedded in a layer of grey burnished sherds. Tuleilat Ghassûl is situated on the northeastern side of the Dead Sea. It is seen then definitely that the Ghassulian culture preceded that of the age of grey burnished ware and that it extended as far as the plain of Esdraelon. To the Ghassulian phase of the 'Affûleh site belong remains of structures which were built of crude, plano-convex bricks, baked and unbaked, in which traces of finger-impressions of the brick-makers can still be seen. It was impossible to ascertain the plan of the structures.

Excavations were conducted at Tell el-'Ajjûl near Gaza, on behalf of the British School of

¹ The writer wishes to thank Mr. W. A. Heurtley, editor of the *Quarterly of the Department of Antiquities in Palestine*, for his courtesy in placing the proof-sheets of the forthcoming report on Palestine archaeological undertakings at his disposal. It is a pleasure to express thanks to the following scholars, who have most kindly furnished the writer with brief reports on the excavations under their direct charge or general supervision: Miss G. Caton-Thompson, Sir Flinders Petrie, Mr. G. Loud, Mr. P. L. O. Guy, Dr. E. L. Sukenik, Mr. J. Waechter, Prof. W. A. Campbell, M. Daniel Schlumberger, and M. André Parrot. To Mr. R. W. Hamilton, Director of the Department of Antiquities, Palestine, Mr. J. H. Iliffe, Curator of the Palestine Archaeological Museum, and to Mr. Lankester Harding, Chief Curator of the Transjordan Department of Antiquities, the writer is indebted for furnishing or giving access to information.

² *Biblica* xix, pp. 260-266.

³ *AJA*, xlii, 1938, p. 168.

⁴ *PEFQ*, 1936, pp. 150-154.

Archaeology in Egypt, under the direction of Dr. E. Mackay and Dr. M. A. Murray, members of Sir Flinders Petrie's staff. The portion of the site which was excavated was a continuation of the Hyksos town previously found by Sir Flinders Petrie. Remains of streets and houses were uncovered. In these were many burials of the Bronze Age. All yielded a certain amount of pottery, and a few yielded also gold and silver jewellery, in the shape of butterfly earrings, twisted earrings, toggle-pins, etc. A hoard of the precious metals was found, the objects being of the same type as the hoards published by Petrie in *Ancient Gaza* IV. A horse-burial of a type that suggests a sacrifice was discovered.

The model excavations at Tell ed-Duweir¹ on behalf of the Wellcome-Marston Archaeological Research Expedition were continued for most of the season under the direction of the late J. L. Starkey, and then under the direction of C. H. Inge, with L. Harding acting as adviser. The eastern face of the Palace Fort was exposed along its entire length of 210 feet, down to the level of the white plastered court. Built up against the massive foundation courses of the Palace Fort was a row of poorly constructed houses. The floors were covered with thick ash, and among the pottery in the charred debris, the greater part of a water-jar was found, on which a jotting or receipt had been written in the manner of the Samaria ostraca. Not much is legible, but the first words are clearly "In the ninth (year)"; a comparison with *Jeremiah* XXXIX, 1 has been suggested. The topmost stones of the Palace steps had been incorporated in the floors of these makeshift houses above, and on their removal, ten steps of the flight in use until the time of the Babylonian attack of 597 B.C. were recovered. The Palace Fort was not rebuilt after the initial burning, and there was therefore no need to replace the steps. They themselves had replaced an earlier flight, in use probably ca. 700-600 B.C., and of which only the two topmost steps have been exposed. On the vertical face of the upper ones are scratched drawings of a lion and other objects, and in the corner some schoolboy has written the first five letters of the Hebrew-Phoenician alphabet, showing that the alphabet was studied in its conventional order as early as the seventh century B.C. At the base of the steps was a mud and stone podium, plastered over, which may have served as a mounting block. In front of them, against the

¹ PEFQ, 1938, pp. 240-256.

Palace wall, was a curious "drum" of hard limestone, the upper surface of which was pitted with eight small depressions. Père Vincent compares it to a similar stone at Mallia, in Crete. In one house, built against the east side of the Palace destroyed in 597 and attributed to the reign of Zedekiah, was found a jar, on the bottom of which a well executed drawing had been incised. It represents a pair of ibex eating a plant.

Examination of the area within the city gate has progressed; a road runs into the city, flanked on each side by shops and houses, and an alley turns northward just inside the gate. The inner gate-tower was of brick, on stone foundations; two of the southern piers have been exposed. Between them three steps lead to a doorway (still unexcavated), which presumably gave access to the upper stories. A double-tiered bench fills the remaining space. The raised cobbled threshold of the inner gate is intact and two grooves had been left, possibly to take the wooden beams on which the doors were set up (cf. *Nehemiah* III, 3). They were filled with ash. On either side of the gate were burnt houses. In the fallen debris of one of these houses was found the upper part of a jar, inscribed with the Hebrew letters *b t m l k*, showing that the jar held the capacity of a "bath." From the size of the jar it seems likely that the jars stamped with the *l m l k* seal on the handle also hold this amount.

It is now established that the great pit south-east of the Palace Fort was never finished or put in use. Quarrying had proceeded further at the southern end, where there was a drop of some twelve feet, while in places the masons had only partially cut out great blocks of stone. At the northwest corner of the pit a boss of limestone had not been removed, owing to its harder nature, and some natural resemblance to a human head had encouraged the masons to increase the likeness. It is possible that the great pit, approximately 25 m. square, was constructed as a reservoir, to replace an earlier water-system. The great open area, east of the Palace Fort, would have formed an enormous catchment area draining directly towards the shaft.

A section adjoining the cemetery area, cleared during the preceding season, at the northeast corner of the mound, was examined. It was honeycombed with cave dwellings of Early Bronze Age date and with later tomb chambers. One large cave showed on its walls the marks of the flint adzes used to enlarge the interior, and here a

fine "hole-mouth" jar stood in position, practically intact. Some caves had been re-used as dwelling places in the Iron Age II period, and a good selection of burnished vessels was found. An Iron Age burial in a well cut chamber presented a chemical problem, as a black deposit had formed inside the sealed tomb and over an extensive area outside, which could not have been caused by fire. Analysis showed it to be of organic nature, but the reason for its presence is still obscure.

Finds on the saddle area, close to the camp-house, included an ostrakon from the débris covering the Iron Age roadway. It appears to be a list of names, followed by numerals. Two robbed tombs supplied fragments of at least three pottery coffins, of the "slipper" type. The lids were moulded to represent human features, and down the front of one was an inscription in hieroglyphs, badly imitated by a local scribe. The reading is uncertain, but a phrase "Waters of the west" is not disputed. Associated objects date this group to the XIXth Dynasty. An isolated discovery in the southern valley nearby consisted of fragments of an anthropomorphic vase, burnished, and painted in black and red.

Work on the Temple area is at last complete. Only the west wall of the building, built on bedrock, now remains. Elsewhere the early rubbish pits have been cleared and all soil removed from the bottom of the fosse. Some fine ceremonial vases were recovered, including a gigantic cooking-pot, a brazier and a polychrome vase with metopes of ibex, and ibis, and a tunny fish. The south face of the massive cross wall over the fosse, on which the antechamber rested, has been exposed. This wall was based on a rock ledge, left standing some two feet above the bottom of the moat.

The results of the six seasons of excavations are now being prepared for publication under the direction of Lankester Harding. It is hoped to resume work at Lachish when publication of results to date is complete. A detailed report on the crania found in 1935-36 will shortly be available.

The Megiddo expedition of the Oriental Institute of the University of Chicago again had a very successful campaign,¹ under the direction of Gordon Loud. During the past season information was gained with regard to the first settlers on the site which commanded the main road between

¹ *ILN*. Nov. 19, 1938, pp. 926-929.

Egypt and Asia. Sections of the Chalcolithic and Early Bronze Age settlements were laid bare, and the bedrock on which the first inhabitants made their homes was exposed. Stratum XX, to which the earliest building period is assigned, lies immediately upon bedrock and employs in its fragmentary architecture both the natural rock and crudely built stone walls. In this stratum were found decorated sherds, both incised and painted. Many of them suggest the Upper Neolithic of Jericho, but are mixed with true Chalcolithic specimens such as were found in the earliest stages in the Megiddo necropolis. This stratum is probably to be assigned originally to an early phase of the Chalcolithic period, and is to be dated about the middle of the fourth millennium B.C.

Stratum XIX is the work of a people already versed in architecture. A massive building was partly excavated. It had thick, well built walls of mud-brick upon single-coursed stone foundations, and presents a vivid contrast to the crude architecture of Stratum XX. A wall 3 m. wide, extending across the entire area, provides one side of a room containing what appears to be an altar, although no objects were found to validate this assumption. Originally the altar was rectangular, with the addition of a low shelf. Subsequently it was enlarged to an irregular shape. Flat stones were set into the floor at uneven intervals along both walls and down the center of the room. In front of this shrine building, a stone pavement sloped downward towards the edge of the mound, where it was destroyed by later construction. Upon many of the paving-stones are incised drawings of human and animal forms,² forming a picture gallery, so to speak, of art of the last half of the fourth millennium B.C. These drawings recall those scratched on pottery of Stage V of the Chalcolithic series excavated in 1932 on the east slope of the mound. This is evident in the pottery of Stratum XIX, in which Chalcolithic forms far outnumber Early Bronze wares. The Chalcolithic pottery contains numerous specimens of "cornet" shapes, recalling similar forms from Tuleilat Ghassûl. The Megiddo specimens, however, are of much finer ware, and are invariably decorated with red lines. Such advanced decorative technique as incised herringbone patterns enclosed by red paint is found upon bowl rims. A large and well preserved bronze sword was found in Stratum XIX.

With Stratum XVIII, the architecture becomes

² *ILN*. Nov. 26, 1938, p. 975.

even more massive. The city wall was originally 4 m. wide, and was subsequently doubled in width. When found, the wall was still 3.5 m. high, and originally must have been considerably higher. Structurally it resembles the great wall of contemporary Ai. Although there is to a certain extent a carry-over of Chalcolithic pottery-forms in this stratum, the predominant types are definitely of Early Bronze I character. Flat, high-sided platters, with a tendency to red burnished washes, and metallic bowls with inturned rims and pattern burnishing are well in evidence. The first half of the third millennium B.C. may be tentatively assigned to this stratum.

Stratum XVII had been dated, as a result of a previous season's work, to the period lasting approximately to the end of the third millennium B.C. The new results tend to confirm the Early Bronze Age dating for this stratum. In the west extension of Stratum XVII there was uncovered a unique circular stone structure, the summit of which is approached by a flight of steps. There was an enclosing wall, not completely excavated, around it. The circular structure may possibly be a sacrificial altar in a shrine, as suggested by quantities of animal bones found about the base of the steps. Among the pottery-forms handmade or tournette-made platters, stump-based vessels, string-cut-base bowls, and vessels with pushed-up ledge handles predominate. The pottery is closely related to that of Stratum XVIII.

Clearance of the Hyksos levels under the palace in the north area provides further evidence for the Middle Bronze sequence previously established throughout the corresponding strata in the east area. The city gate of Stratum XIII, about 1800 B.C., which, with the city wall of this level,

is of mud-brick, lies under the palace. Before reaching the outer portal of the city gate, it jogs inward. Within the gate one must turn left to reach the inner portal, the axis of which is at a right angle to that of the outer portal.

Excavations at Tell el-Kûdâdî¹ (Tell esh-Shûneh) were continued from January, 1938, till the middle of March by E. L. Sukenik, on behalf of the Hebrew University. Remains of a fortress, dated by pottery finds to the tenth-ninth centuries B.C., were unearthed. The fortress was built of dressed sandstone. Its remains consist of a line of construction, 7 m. wide, extending south-north for about 30 m., which turns at its north end to the west. From this point, the line of building could be followed for about 6 m., the rest having been washed away by the sea. It is to be supposed that a parallel line existed also at the south end, but there is nothing left of it. Whether this structure was closed to the west, or open towards the sea, is a moot question. A number of square or rectangular chambers was found inside the structure flanking a central entrance at the west. They were preserved to a height of about 4 m. From the number of disintegrated bricks, it may be assumed that the upper courses were built of baked bricks. At some later date the structure was burnt, as is shown by a layer of ashes. The building was then reinforced on the east side by a wall, 2.5 m. thick. A paved rampart sloping towards the east led up to the entrance of this building.

About 20 m. to the north of these ruins, the remains of a wall of the Persian period were found. In addition, the fragmentary ruins of some Byzantine houses, including a bath, were discovered.

PALESTINE: LATE HISTORIC ARCHAEOLOGY

Mr. T. J. Colin Baly, on behalf of the Colt Archaeological Expedition, undertook soundings at 'Aujâ el-Hafir, Isbeitâ and Khalasah, in southwestern Palestine. A sounding was made at 'Aujâ el-Hafir in an attempt to find sequences in the pottery, fragments of which lie against the base of the fort there, and to compare the results with the new material obtained from Khalasah. No definite results were obtained. A certain amount of clearing and excavating was undertaken among three buildings lying outside the town limits of Isbeitâ. A circular building seems to have been a dove-cote. The two other buildings were farmhouses. In a field adjacent to one of

these buildings was an irrigation system, which still requires study.

The object of the season at Khalasah was to establish a sequence of pottery from Hellenistic to Arab times, particularly by opening up the largest dump on the site, northeast of the town proper. The dump, however, belonged entirely to the third to fourth centuries A.D. A careful surface examination and four additional soundings showed that all the dump heaps around the town must be similarly dated. The chief results of the season are:

1. A large amount of pottery was collected

¹ *AJA.* xlii, 1938, p. 168.

which it should be possible to date between close limits from the many associated coins.

2. Contrary to accepted opinion, sand was a serious problem at Khalaṣah by the third century A.D.

3. Khalaṣah attained its greatest extent by the fourth century A.D. at the latest, after which its decline began.

4. The existence of a Hellenistic cemetery was established.

In addition, a number of inscribed and decorated stones in possession of the modern inhabitants was collected, eight of them being dated. One is a gravestone of 426-7 A.D., without any Christian symbols; the others are Christian grave-stones of 544-603 A.D. This group of inscribed gravestones forms the first representative collection from the common cemetery of a southern Palestinian town.

The work of the Department of Antiquities in Palestine, which during the last three years has been engaged, under the direction of D. V. Baramki, in excavating Kh. Mefjer,¹ an Omayyad palace 5 km. north of Jericho, is now completed. The palace is rectangular in plan, measuring 75 by 67 m. It is divided into four blocks, each constructed along the side of a square cloistered court. The walls are built of double stone facing with rubble filling, and are strengthened by round towers at the four corners, half-round towers in the middle of the north and west walls, and a square minaret in the middle of the south wall. The façade of the palace, which is on the east side, consisted of two stories of arcades, the lower flanking the monumental gateway, while the upper, with its white marble columns and carved stucco balustrade, formed an open loggia overlooking the cloistered atrium in front of the palace. The gateway is flanked by two square towers. It was roofed with a multifoil barrel vault, the outer voussiors of which were decorated with a series of engaged fluted columns and Corinthian capitals radiating from the center of the arch.

The entrance hall has two seats on each side, similar to those in the gateway. The seats are flanked and separated from each other by clusters of columns. The column shafts and the walls are decorated with carved stucco, most of which was found in the débris; it includes human, animal, floral, and geometrical motifs. Some parts have been reassembled. They include a panel of human

¹ *ILN*. Sept. 3, 1938, pp. 407-409; *QDAP*. viii, 1938, pp. 51-53.

busts, a semi-nude dancing girl, and a niche for a statue. The antipathy to representation of human and animal designs in Islamic art arose after the period of the Omayyads. The writer finds a reflection of many Nabataean art motifs in Omayyad art. The hall had a barrel vault resting on four wall arches carried by the clusters of columns. The entrance hall leads into the spacious central court, measuring 28.95 by 27.73 m., through the east cloister. The court is surrounded on all sides by arcaded cloisters, the arches resting on polished red marble columns carrying Corinthian capitals. An upper floor is now destroyed. In the south block is the mosque, containing one of the earliest known examples of a round *mihrab*, or prayer niche. The west block contained the residential quarter of the Caliph. The throne room occupied a hall in the center of the block. There was a subterranean bath-hall below the throne room, with a mosaic floor made up of squares diagonally set within a linear border. The walls of the rooms of the east block were decorated with painted frescoes. The motifs included human, animal, floral, and geometrical designs in natural colors.

The date of the palace has been supplied by an inscribed marble fragment bearing the name of Caliph Hisham, who reigned from 724 to 743 A.D. The palace was never completed, having been destroyed by an earthquake in 746 A.D. The work was not resumed, because in 750 A.D. the Omayyad dynasty came to an abrupt end when the Abassids rose to power. They were not interested in completing an Omayyad monument.

An expedition of the Goerresgesellschaft and Islamic Department, Staatliche Museen, Berlin, directed by Dr. Puttrich-Reignard, worked from November 1, 1937, to May 1, 1938, at Kh. Minyeh, near the northwest end of the Lake of Galilee. Its principal aim was the clearance of the southern palace area, where the outlines of the buildings had been ascertained during the previous year.² No new discoveries were made as regards the general plan of the building, which consists of a mosque in the southeast corner with an arcaded room adjoining it and at the other end a marble hall (perhaps the throne room), and a group of five rooms. A few side rooms were discovered in the southwest corner. In the western group of buildings (which was connected with the southern palace), the only part excavated was a well preserved staircase on the south. The exist-

² *JJA*. xlii, 1938, p. 170.

ence of this staircase had already been ascertained by A. M. Schneider.

This year's campaign confirmed the conclusions of last year, namely, that the arcaded room was left unfinished by the builders. Only a few traces of the original sumptuous decoration of the marble hall were left. The supports dividing the room into three naves have disappeared, with the exception of one marble base. Even the marble slabs covering the floor and the walls had been extracted and removed, only a few fragments being left. The excavators were therefore agreeably surprised to find an excellently preserved floor mosaic in the big central room of the five-room group. As in all mosaic pavements found on this site, the decoration of this mosaic is exclusively geometrical. A cleverly thought-out system of lozenges covers the central field, which is surrounded by several frieze-borders. The polychrome arrangement of the mosaic is especially charming, this result being obtained by the simultaneous employment of glass and stone cubes. In the small northwest room another mosaic was found; it was, however, not quite complete. An investigation of the inner side of the north wall of the fort led to the discovery of a further series of rooms. Additional excavation is required to uncover the contents of these rooms.

Many small finds confirmed the results of the former excavations. The material from the top levels is almost exclusively mediaeval Arabic, belonging to the thirteenth and fourteenth centuries A.D., while the objects found in the lower levels, consisting mostly of unglazed pottery, can be regarded as early Islamic. The foundation of Kh. Minyeh in the early Islamic, Omayyad period is therefore not impossible in view of the evidence thus far collected; a definite conclusion must, however, depend on the results of future work.

In order to ascertain the character of the strata below the fort level, a series of deep cuts and a sounding trench were made at the eastern part of the site, outside the fort. In all trenches, down to groundwater level, at 3 m. deep, there were found large quantities of thin, red, ribbed and unribbed ware.

Mr. P. L. O. Guy has continued the archaeological survey of Palestine on behalf of the Palestine Exploration Fund and the British School of Archaeology, Jerusalem.¹ Several trips were made in the Negeb which have resulted in the discovery

¹ *AJA.* xlii, 1938, p. 170.

of a number of unrecorded buildings, of which plans were made, and traces of ancient terracing for cultivation have been noted in many places. A small Early Bronze or Chalcolithic site has been observed at Kurnub, where an examination of the main *wādī* has shown that there are several weirs above the well known dams and that the two lowest dams were used for storing water, of which they could contain at least two million gallons. The Kurnub waterworks are elaborate and extensive, and it is hoped to study them in detail with the aid of air photographs.

Work has also been done on map sheet No. 7 (Jaffa-Tel-Aviv). At Laṣṣrūn it has been possible to trace the course of a number of walls in the Crusader castle and to elucidate the disposition of its vaults, with the result that an architect's plan has been made which shows that the castle was an important structure of considerable size. The central building has yielded the most complete plan. It has walls about ten feet thick, with a batter which must give them a much greater thickness at the now buried base. Along the whole of the north side of the ground floor there was a single vaulted chamber, about twenty-five feet wide, which meets a similar chamber occupying most of the west side. Along the south side there are two rows of eleven vaults each, with pillars between the rows. In the eastern central part, near the entrance, a complex of vaults fills all the space there is, and west of this is a large cistern. In a peasant's house is a fragment of a massive arch, which does not fit into the plan at all, and must belong to an earlier building.

At Rās el-'Ain a number of details previously unrecorded has been observed in the Qal'ah, and of this too an architect's plan has been made. It stands on a large tell, oriented northwest by southeast, and measures 500 by 400 m. Excavations carried out by the Department of Antiquities showed that it was already occupied in the Middle Bronze Age. In a much later period it may be identified with the Herodian Antipatris.

The plans and elevations which the Public Works Department had made of Jisr Jindās, built near Lydda by Baybars in 1273 A.D., have been checked, and some archaeological details added. The bridge is in danger of destruction by flood. The present bridge, however, was built vertically over another, either Roman or Byzantine in date. The lower part of the round arch of the earlier bridge is buried in the accumulated silt. An enormous amount of silt has been washed

down to the Jisr Jindās from the higher parts of the *wādī* since the bridges were built, and helps to make plain the damage which man-aided soil-erosion has done to Palestine since Byzantine times.

It was also possible to inspect a number of sites of less importance, and some attention has been given to the possibility of using ancient sites as a means of gauging the rate of advance of sand dunes, and of estimating the dates at which they began to form. The latter would appear to vary with localities, but in no case to be very ancient. In the region just south of Jaffa practically the whole of the dunes would appear to have formed since Roman times, and their rate of advance seems to have been in the neighborhood of 5 m. a year, but this figure is provisional. Elsewhere, the investigations of the Survey go to show that man-aided soil-erosion has been steadily on the increase since Roman and Byzantine times, and that it has been a potent factor in the abandoning of many sites which then flourished.

In his survey, Mr. Guy is making use of the new map of the Negeb, on the scale of 1:100,000, which the Palestine Government Survey Department is issuing, the Beersheba sheet having already appeared. In this connection reference may be made to two excellent maps published during the year by the Palestine Government Survey Department, either under the direction or with the assistance of competent authorities. One is called "Palestine of the Old Testament," and the other "Palestine of the Crusades." Both were compiled under the direction of Col. F. J. Salmon.

The first season's work (1937-38), in the southern desert of Western Palestine, on behalf of the British School of Archaeology in Jerusalem, was carried out with conspicuous success.¹ Much additional evidence has been gathered, in addition to that obtained during the last few years by Frank and the present writer, on the trade-routes and inhabited sites of a large area which was once much less of a desert than it is today.

In the course of repairs undertaken early in 1938, the Armenian authorities had occasion to remove the wooden screens and altar furnishings from the central and northern apses of St. Helena's chapel in the Church of the Holy Sepulchre in Jerusalem.² Two mediaeval stone altars were thereby exposed, as well as the masonry

of the apses, now stripped of plaster, and remains of a marble floor in the central apse. The main altar is built of well jointed limestone blocks, of ashlar construction, covered by a single marble slab measuring 2.41 m. by 1.34 m. The moulded edge of this slab projects about 8 cm. beyond the front and sides of the altar itself. A slot and four iron pegs near the back edge of the slab indicate the position of a superstructure that has now disappeared. There is also a slot sunk in the top of the masonry which runs some distance from near the center of the back of the altar immediately before the covering slab. Behind the altar is a recess 1.01 m. wide and 0.41 m. deep, spanned by six voussoirs forming a low segmental arch. The arch springs from two wedge-shaped stones, the backs of which are cut to prolong the curve of the backs of the voussoirs. The altar is aligned with the front edge of the barrel vault preceding the half-dome of the apse. In the floor, on each side of it, there is a strip of red marble, with a square slot sunk in it, now refilled. There are vestiges of a *piscina* in the north side of the apse, as well as a rough cupboard which was opened directly behind the altar at a period subsequent to the construction of the apse. The masonry both of the apse and of the altar is heavily scored with incised crosses of various forms.

The altar, or prothesis table in the northern apse, is also of limestone, of ashlar construction, smaller and rather less well built than the main altar. It is surmounted by a plain slab of marble. In the back of the table there is an arched recess, 0.36 m. deep and 0.66 m. wide. The edge of the recess is bevelled. As in the main altar, there is a slot, here 0.52 m. long, running in from the back beneath the top slab. The front of the table is aligned with that of the main altar. In the wall immediately south of the prothesis table is a semicircular niche, 1.27 m. from the ground, measuring 0.73 m. in height and width. The removal of the plaster from the walls of the chapel has exposed a number of names painted in Gothic script. One of these inscriptions includes the date 1501.

A deep rock-cut channel was discovered by workmen employed on the construction of a new house in the Sheikh Jarrāh Quarter, Jerusalem. The channel is about 3 m. east of the main Nablus road, to which it runs parallel for a distance of some 22 m., being blocked at each end with falls of earth. The width is 60-70 cm. and the depth approximately 4.5 m. below the level of the road.

¹ *PEFQ.* Oct., 1938, pp. 211-235.

² Palestine Department of Antiquities.

In places the toolmarks of the original construction are visible on the rock sides. The channel is roofed with rough slabs of stone and appears to have been some form of aqueduct bringing water

to the city from the north. A section of this aqueduct was discovered some meters further north when the Nablus road was under construction in 1931.

TRANSJORDAN: PREHISTORIC AND EARLY HISTORIC ARCHAEOLOGY

During December, 1937, and February and April, 1938, J. D. Waechter, on behalf of the British School of Archaeology, Jerusalem, carried out a number of preliminary soundings in a series of sites in the Wādī Dhōbai, about 40 km. east-southeast of 'Ammān. The culture of seven sites found has a strong resemblance to the Tahunian I of Jericho in its scrapers, points, one type of burin, *lames de dégagement*, and core-tablets, and one type of burin distinctive to it. Three other sites have end-scrapers that can be compared with those of Wādī Mughārāh E. Two more sites are known, discovered by Henry Field in his North Arabian Desert Expedition, and are referred to by him as Stations 212 and 213.

In March-May, 1938, the American School of Oriental Research, Jerusalem, under the direction of the writer, carried out excavations at Tell el-Kheleifeh. It is situated near the Gulf of 'Aqabah, about half way between 'Aqabah on the Transjordan side, and Mraṣhrāsh on the Palestine side. The site is to be identified with Ezion-geber-Elath. It is now several hundred meters distant from the gulf, into which the shore-line extends at the rate of about ten centimeters a year. About a third of the site has been opened up. The construction is mud-brick. At the northwest corner of the site is an intricate smelting and refining plant, with double rows of flues in the walls of the rooms, and an interconnecting system of air-channels, which extend lengthwise through the walls. Much copper and some iron were smelted and refined. There were numerous workshops in the town for the manufacture of metal articles. Fish-hooks, small spearheads used in spearing fish, fibulae, animal figurines, nails, small dishes, etc., were made out of copper, and to a lesser degree, of iron. Copper and iron deposits exist in the vicinity and along the length of the 'Arabah. All indications point to the fact that the main period of the occupation of Tell el-Kheleifeh and the best buildings belong to the time of King Solomon. His ships used to sail from Ezion-geber to Ophir and back.

All of the pottery found belongs to the Early Iron Age and there are enough familiar types to relate it to the Early Iron Age pottery of Pales-

tine and Transjordan. There are sufficient differences in much of the pottery, however, from that generally prevalent in other Palestinian and Transjordanian sites of the same period, to compel a new classification. Ezion-geber is probably the apex of a cultural triangle formed by north-western Arabia and northeastern Sinai. When these areas are explored, it is probable that the same types of pottery will be found as in Ezion-geber. There were also connections with south-westernmost Palestine. Some of the Ezion-geber objects can be paralleled in ancient Gaza. The new types of pottery at Ezion-geber are distinguished in particular by horn-handles and ledge-handles on crude handmade pots. The ledge-handles are large and small, but always have a definite utility. Sometimes there were small, vertical ledge-handles, although most of them were of the horizontal type. Many of the latter type are at times so deeply serrated that they may be said to consist of a series of horn-handles, wedged together at their bases. They might be designated as "horn-ledge-handles." The presence of the ledge-handle type of pottery may be explained in part by the utility of such pottery in a smelting plant and a manufacturing center. A more adequate explanation would appear to be that they belong to a distinctive cultural area, quite apart from that of Judah and Edom. More familiar types of pottery also exist at Tell el-Kheleifeh, such as cooking-pots with ribbed rims; pilgrim flasks; some, but not much, burnished and painted ware; lamps, etc. None of the pottery precedes the thirteenth century B.C., and little of it can be dated beyond the seventh century B.C. A number of stamped jar-handles were found. They read: "Belonging to *q w s ' n l*, the servant of the king." It is a theophorous name, containing in its first half the name of an Edomite deity, Qōs. Other inscriptions were found, including two letters of a South Arabic script. The latter inscription, the first of its kind to be found in a controlled excavation, may be assigned to the eighth century B.C.

The American School of Oriental Research in Jerusalem continued the archaeological survey of Transjordan under the direction of the writer,

in coöperation with the Transjordan Department of Antiquities. The total number of ancient sites now examined by the expedition somewhat exceeds seven hundred. The survey has been more or less completed as far as the Wādī Zerqā. In conformity with recent refinements in pottery-dating in Western Palestine, due particularly to studies by Engberg and Shipton, Albright, and Wright, the writer now dates the main extent of the Early Bronze Age occupation of Transjordan south of the Wādī Zerqā between the twenty-third and twentieth centuries B.C. There are numerous indications, however, that the beginnings of the Bronze Age occupation preceded the twenty-third century B.C. There is no reason why excavations at some of the sites discovered should not reveal early occupation going

back as far as the Chalcolithic period. In the main, in all the area examined there is no sedentary occupation between the twentieth and the beginning of the thirteenth centuries B.C. In Ammon and the territory once occupied by Sihôn, king of the Amorites, the Bronze Age and Iron Age civilizations are not inferior to those of Moab and Edom and Western Palestine. Previous explorations by Albright north of the Wādī Zerqā show that in north Gilead and the Haurân there is the same continuous occupation from EB to EI I-II that characterizes the history of settlement in Western Palestine. On the very edge of the Wādī Zerqā, the writer has found several sites, where, in addition to EB and MB I sherds, some early MB II sherds were found.

TRANSJORDAN: LATE HISTORIC ARCHAEOLOGY

At intervals since 1929 an Italian expedition under the direction of Renato Bartoccini has been conducting excavations on the acropolis at 'Ammân.¹ They were continued during 1938, with results which as yet are not public. The magnificent Roman temple has been partly cleared, and many important architectural features brought to light. Among them was a frieze with the name of Marcus Aurelius on it. The excavator is of the opinion that the temple was begun before the time of Marcus Aurelius and that building operations were resumed during this period.

Much evidence of the pre-Roman occupation of the citadel hill was uncovered. The beautiful Arabic structure north of the temple was also cleared. The excavator finds similarities to Meshetta, but does not detail them in the notes at the writer's disposal. The scientific public awaits with much eagerness somewhat fuller reports on the exceedingly important excavations than have appeared thus far.

During the first half of December, 1937, the joint expedition of the American School of Oriental Research, Jerusalem, and the Transjordan Department of Antiquities, under the direction of the writer, concluded the excavations at Kh. et-Tannûr,² which had previously been carried

on during March and April, 1937. A new Zeus-Hadad head of Parthian type was found. The first part of the work was devoted to an examination of the shrine in the raised, inner temple court. It had previously been determined that there were three distinct building periods in the history of the temple as a whole, and of the inner shrine in particular. The north walls of Shrines II and III were removed, and it was found that the pavement went under them and had been laid originally against a low plinth extending along the north side of Shrine I.

Jebel Tannûr may have been a sacred mountain also in pre-Nabataean times. The original Nabataean shrine was a small, simple structure, measuring 1.45 m. by 1.38 m. It may well have been constructed in the first part of the first century B.C. A considerable period after the construction of Shrine I, and some time before the construction of Shrine II, perhaps in the third quarter of the first century B.C., the shrine had so grown in importance and wealth, that a well made, dressed-stone pavement was laid in the raised inner temple area around Shrine I. The second shrine was built around and over the first. To this Shrine II belongs the Haretat Huldû inscription, dated to 7 B.C. The third shrine, built over the second, may date to the second quarter of the second century A.D. On the north and south sides of the temple-complex are triclinia, in which the ritual meals took place. There is a striking relationship between the entire temple-plan of Kh. et-Tannûr and that of the Great High Place of Zibb 'Atûf at Petra.

¹ Bartoccini, "La Rocca Sacra degli Ammoniti," *Atti del IV Congresso Nazionale di Studi Romani*, 1938, pp. 3-8, pl. I-V; cf. also "Scavi ad Amman," *Bolletino, Associazione Internazionale Studi Mediterranei* 1932, pp. 16-23; 1933-34, pp. 10-15.

² *AJA*, xlii, 1938, p. 190; *BASOR*, 69, pp. 7-18.

ARABIA

During the winter of 1937-38, Miss G. Caton-Thompson, in company with Freya Stark and E. W. Gardner, undertook an exploratory trip to study the geology and archaeology of Hadhramaut in southwest Arabia.¹ Miss Caton-Thompson was responsible for the archaeology of the district. Her work centered on Hureidha south of the Wādi Hadhramaut. It covered the chief aspects of pre-Islamic activities in the region, and yielded information concerning domestic dwellings, irrigation works, and places of worship and burial. The ruins are scattered over about ten square kilometres of the loess-like plain. A noticeable feature was a large number of fairly evenly spaced stone-rubble heaps, which sprang from bare, wind-swept ground. Detailed mapping proved them to be relics of a large irrigation system. The source of the water was the monsoon summer rain. The flood was led off the main channel far above the irrigated area, to which it was carried by a canal 16-20 m. broad, still discernible in the sandy waste. From this, numerous smaller channels distributed the water in a network of runnels. The irrigated area was occupied by homesteads. One such homestead was excavated, and disclosed a five-to-six roomed, mud-brick building, formerly limewashed, fitted with mud-brick benches. Logs of wood reinforced the door-treads. The ceiling had been constructed in the fashion still practiced in the region, of twigs laid in parallel bundles across rafters and overdaubed with mud. The writer is particularly interested in this description of a South-Arabian house, because it fits exactly the description of houses built at Ezion-geber on the northern shore of the Gulf of 'Aqabah at an earlier date.

Nearby was a temple, which was excavated by

the expedition. It is an oblong structure, measuring 17 by 20 m., set on a raised platform capping a natural eminence, with its main façade on the southwest. The temple platform was reached by two stone stairways. There is reason to believe that the temple was originally wholly plastered; pavings, stairways and partition walls were certainly thus faced. These details with regard to the temple are particularly interesting because of the close connections that may be discerned between them and features of the Nabataean temple at Kh. et-Tannûr in Transjordan, and of the temple at Hierapolis, described in Lucian's *De Dea Syria*, and Nabataean altars in Petra.² A cluster of outlying buildings by the temple included some apsidal structures of small size, characterized by a central, free-standing, altar-like stone, surrounded by a bench of flat slabs, rectangular on three sides, convex on the front. Standing erect against the base of one such "altar" were two baetyl stones, one rudely fashioned from a stone into human form, the other a symmetrically tapered, rough-dressed stone. Both were carefully imbedded upright in plaster, and before them were placed stone incense-burners of rectangular form, stained red and patterned, as well as earthenware saucers and a stone offering tray. The temple, referred to in one of the dedicatory inscriptions by the name Madabum, was devoted to the worship of the Moon God.

Miss Caton-Thompson thinks that the semi-civilized culture brought to light near Hureidha probably lies within the last few centuries before the Christian era. Debased amulets of Egyptian derivation were found, in addition to seals which denote intercourse with Achaemenian regions.

SYRIA: EARLY HISTORIC ARCHAEOLOGY

At 'Aṭshānah,² near Antioch, the British Museum continued excavations in 1938, again under the direction of Sir Leonard Woolley. The palace excavated was built about 1600 B.C. and destroyed by fire about the middle of the fifteenth century B.C. Nearly 300 inscribed tablets were recovered from the ruins. In them are mentioned the names of two kings, Niqmepa (?) and his son Ilima-ili, rulers of the city of Alalakh, which is

¹ Caton-Thompson, *Nature* 142, July 23, 1938, p. 139.

² *ILN*. Sept. 7, 1938, pp. 503-505.

identified by Woolley with the 'Aṭshānah mound. The palace, divided into two parts, was two stories high. It appears that the royal family lived in the upper chambers, approached by a wide flight of wooden stairs, built in a brick stair-well. The ground-floor rooms were given over to the personal attendants of the family, the rooms on one side of the central court being reserved for men, those on the other side for women. Each set of apartments forms a self-contained unit with bedrooms, bathroom and lavatory. Other quarters

² *BASOR*. 69, p. 19; *AJA* xlii, 1938, pp. 171 ff.

in a range of rooms surrounding the front courtyard and in an annex, housed lesser servants, store-rooms, an archive room, etc.

The older part of the palace-complex was built upon the town wall of an earlier period. Below this were the remains of a second and older wall, and buried in the mud-brick of this was the gate of the city of Alalakh as it existed in the eighteenth, or possibly the nineteenth century B.C. The entrance passage passed between high towers, and was closed by three sets of gates, the jambs of which were solid piers projecting from the tower walls. A little copper statuette of a god riding on an eagle was found among the ruins of the gate. The ruins of the palace yielded, among other things, a ram's head in polished limestone, which, according to Woolley, is the oldest work of Hittite art known. Painted pottery found is associated with the Hurrian element of the town's population. There was also recovered a fine collection of pottery of the Cypriote Bronze Age type, which seems to be of Asiatic origin, according to the excavator.

Under the direction of M. E. Mallowan, on behalf of the British Museum and of the British School of Archaeology in Iraq, in 1938 a third campaign of excavation was undertaken at Tell Brak,¹ situated about 25 miles south of Nišibin, in northeast Syria. In accordance with what seems to be almost an archaeological law with regard to important discoveries, there was discovered towards the close of the season's campaign the name and date of a builder on the site. Imbedded in the walls of the palace were mud bricks, stamped with the name of Naram-Sin, fourth king of the Semitic dynasty of Akkad, grandson of Sargon, who founded the Akkadian empire. The palace was therefore first built about 2500 B.C. The palace was finally sacked, perhaps by local inhabitants of the district, who took advantage of the weakening of authority at the end of Naram-Sin's reign. The Akkadian dynasty, however, rebuilt the palace, which probably survived till shortly before 2000 B.C., after which date Brak became a town of secondary importance.

In clay vessels buried under the floors of houses outside the palace were found deposits of earrings of gold and silver; stone cylinder-seals; animal amulets, carved in steatite and lapis-lazuli, and necklaces of semi-precious stones. The jewellery bears a striking similarity to that found in the

¹ *ILN*, Oct. 15, 1938, pp. 697-701; Oct. 22, 1938, pp. 734-735.

royal graves at Ur. Among the cuneiform tablets found on the site were two containing lists of laborers and cattle sent from various places. Among the names of what may have been neighboring towns were hitherto unknown ones, such as Lilabsilum, Sukhna, Kundisi, Khilamat, Khebi-ram, Bishum, Sumukhdar.

The south wing of the palace was found to rest on the top of a huge mud-brick platform or tower, which had been in existence about 3000 B.C., about 500 years before the time of Naram-Sin. The outer walls of this tower were faced with great, rough blocks of basalt. Beneath its foundations was a whole network of subterranean chambers, already plundered of some of their contents in ancient times. Over 40,000 faience beads were, nevertheless, recovered from these chambers, in addition to semi-precious stones, and some beads of gold. There were also numerous amulets, carved in animal form and depicting a complete menagerie. They included lions, gazelles, bears, hedgehogs, ibex, pigs, hares, frogs, eagles, ducks, fish, sheep and cows, in materials ranging from serpentine, alabaster, variegated marble and quartz, to shell, mother-of-pearl, faience and bone. They are representative of the Jemdet Nasr period of art, and extend down to Early Dynastic times. That all these objects were intended as foundation deposits was suggested by the discovery of a hoard of alabaster idols, consisting of about 200 complete specimens alone, not to mention thousands of fragments. Most of the idols had flat bodies, elongated necks, and large eyes often inlaid with black, red, or orange paint. Some had double or triple heads, and a few had a smaller image of an idol engraved on the front of the body, suggesting a symbolic mother and child.

The fifth campaign of the Louvre at Mari on the Middle Euphrates, under the direction of M. André Parrot, lasted from the beginning of October to the end of December, 1937.² The excavation of the palace was continued, but not completed; although 260 rooms or courts have been exposed in a building area of more than five acres, at least a quarter of the building area still remains to be excavated. The palace represents the most complete example of architecture of about 2000 B.C. that has been found to date in the course of Mesopotamian excavation. The excavations in the palace revealed special suites, comprising living-rooms, bathroom and kitchen, which were put at the disposal of the king's guests. From the

² *ILN*, May 28, 1938, pp. 952-954.

great court of the palace a succession of stairways and landings formed a sort of processional way leading to what seems to have been a sanctuary. On the stairs was found a small headless statue, bearing an inscription with the name of Prince Idi-ilum of Mari. Another small statue bore a text giving the name of Lasgan. Several thousands of additional tablets were found in various rooms, bringing the total recovered to nearly 25,000. When finally published, they will contribute immeasurably to the history of the Babylonian world in the time of Hammurabi.

The Ziggurat not far from the palace, which still rises nearly 50 feet over the plain, was partly excavated. It was found that a temple, still comparatively well preserved, had been cut into its

side. It opened on a large terrace. On either side of the entrance stood sacrificial altars. Entrance to the sanctuary is gained by a long, narrow passage, leading to a large chamber against the walls of which stood large beds, which have been associated with the rite of sacred marriage. Two bronze lions faced the door of the sanctuary. They were made of wood, covered with thin bronze leaf. The inlaid eyes were of stone, blue-grey for the pupils and white for the eyeballs. Certain tablets discovered at Mari indicated that one of its kings had kept live lions. There is evidence that around the Ziggurat stood fifteen wooden lions, covered with bronze leaf. They may have been destroyed by the soldiers of Hammurabi, who sacked the palace of Mari.

SYRIA: LATE HISTORIC ARCHAEOLOGY

In the spring of 1938, the Antioch expedition of Princeton University and the Louvre, under the direction of W. A. Campbell, continued its work. In Antioch, the discovery of the Hellenistic bridge, by which the ancient main street was carried over the torrent *Onopnices*, established an important topographical point in the center of the city, and brought to light an excellently preserved example of a monumental Hellenistic arched construction. On the west side of the main street a large building, which the expedition has been excavating for several campaigns, was identified as a bath by a mosaic inscription recording a reconstruction in the sixth century A.D. From this period were recovered examples of ornamental mosaics, designed with textile motifs, and several inscribed Corinthian capitals. On a lower level in the same structure was found a pool, with a mosaic that

contained a large bust of Tethys emerging from the sea. Other excavations in Antioch were developed around chance finds of pavements made by peasants working in their fields.

In Daphne, the well known suburb of Antioch, a complex of houses was excavated; and in Antioch's seaport, Seleucia Pieria, the topographical survey, begun last year, was continued. The street system of the large acropolis of Seleucia was determined, and the clearing in this section of a terrace and a late Doric temple indicated that work here will be very productive. In the lower section of Seleucia, built around the lower harbor, an interesting structure (probably a church) was partly uncovered.

NELSON GLUECK

AMERICAN SCHOOL OF ORIENTAL RESEARCH
JERUSALEM

BOOK REVIEWS

LE PITHECANTHROPE ÉTAIT-IL UN PYGMÉE?, by Paul Buysens. Pp. 49. Brussels, Purnal, 1937.

When tracts such as the one cited above come to hand they usually produce mixed emotions. There is an initial impulse simply to toss them into the waste basket, a second one to castigate them severely and a third one merely to smile and shrug one's shoulders. A year ago Buysens wrote a somewhat lengthy monograph in which he apparently demonstrated to his own satisfaction that the various pigmy groups known to anthropology represent the most primitive living form of mankind, and that such primitiveness could justifiably be interpreted as implying great antiquity. The present essay is another prop to support the peculiar and ingenious construction described in his *Les trois races de l'Europe et du monde*.

This paper summarizes the highly equivocal evidence concerning the presence of an unknown form of man supposedly contemporary with Sinanthropus and Pithecanthropus. The latter, according to Professor Boule's latest ideas on the subject, are Prehominids. As is well known, Boule is reluctant to accept what appears to be the obvious fact, that Sinanthropus was a cannibal. Buysens' explanation is that this unknown form of man was of his early pigmy race. The whole essay smacks too much of: "It's a nice theory and you can't prove I'm wrong." It will be interesting to see what Buysens will do with the newly found evidence from the caves of Chou-kou-tien, which indicate that the stature of Sinanthropus was very definitely short. By judicious use of the terms "evolution" and "hybridization" it should not be too difficult to transform even Sinanthropus into an ancestor of the pigmies.

T. D. McCOWN

UNIVERSITY OF CALIFORNIA

THE EXCAVATION OF TELL BEIT MIRSIM, Vol. II, The Bronze Age, by William Foxwell Albright. Pp. xxiv+96, 56 pls. (*AASOR*. 17, 1936-1937). New Haven, American Schools of Oriental Research, 1938. \$2.50.

The site of Tell Beit Mirsim, lying southwest of Hebron (Southern Judea), was excavated under the direction of Professor Albright in the course of four campaigns (1926, 1928, 1930, 1932). He has

plausibly identified it with the Biblical Kiriath Sepher or Debir. After presenting the results of his excavations to the general reader in his well known book, *Archaeology of Palestine and the Bible*, 1932, Albright is publishing his definitive archaeological report in separate parts. Vol. I (The Pottery of the First Three Campaigns, *AASOR*. 12, 1932) was reviewed in *AJA*. xxxvii, 1933, p. 343; Vol. IA (The Bronze Age Pottery of the Fourth Campaign, *AASOR*. 13, 1933) in *AJA*. xxxviii, 1934, p. 314; after Vol. II, which we are now considering, the author promises to issue in two or three years, the concluding third volume, dealing with the Iron Age.

In dating the Early Bronze-Age levels at Tell Beit Mirsim, Albright accepts the conclusions of G. Ernest Wright (*The Pottery of Palestine from the Earliest Times to the End of the Early Bronze Age*. American Schools of Oriental Research, 1937). The earliest stratum (J) belongs to the end of E.B. III and the beginning of E.B. IV (2500-2200 B.C.); Stratum I is transitional (twenty-second and perhaps twenty-first centuries); Stratum H is dated between 2100 and 1900; Strata G-F. belong to the period 1900-1750; Stratum E ends about 1600 and D about 1550, both of them together corresponding to the Hyksos period; Stratum C (Late Bronze), following a period of abandonment of the site, begins about the middle of the fifteenth century and ends in the latter part of the thirteenth century (ca. 1230).

After dealing with the pottery of the various levels in the preceding volumes, Albright devotes his attention, in this one, to the architectural ruins, the artifacts, and the scanty skeletal remains. No Bronze-Age temple was uncovered at Tell Beit Mirsim. Architectural remains begin with Stratum H; at that time a modest and impecunious walled town stood on the site. The powerful fortifications and the houses of Stratum G are sufficiently preserved to give us a good idea of the architecture of a period for which no other city walls are known in Palestine. Further excavation is needed to gain a complete idea of the bastions of the Hyksos period (Strata E-D). The most important building unearthed is the "palace" of Stratum D. Among the artifacts, the following shed some light on the religion of the ancient Canaanites: the lower part of a stele,

originally two feet high, with a bas-relief of the serpent goddess (Stratum D); a limestone libation tray, decorated with the head of a lioness, and a crude statue of a crouching lion (Stratum C₂); and the Astarte figurines from Strata E-D and C. The most interesting remaining objects, aside from seals and scarabs, come from Stratum D: five conical and five three-cornered pyramidal blue faience playing pieces, and an ivory teetotum; some parts of a gaming board; and bone inlay fragments from furniture, with figures of deer or geometrical designs.

Dr. Albright's competence and skill, both as an excavator and as a comparative archaeologist, need no comment. It is to be hoped that his report on Tell Beit Mirsim, which is invaluable for Palestinian archaeology, will be completed without undue delay.

ROBERT H. PFEIFFER

HARVARD UNIVERSITY

NUZI. REPORT ON THE EXCAVATIONS AT YORGAN TEPA NEAR KIRKUK, IRAQ, CONDUCTED BY HARVARD UNIVERSITY IN CONJUNCTION WITH THE AMERICAN SCHOOLS OF ORIENTAL RESEARCH AND THE UNIVERSITY MUSEUM OF PHILADELPHIA, 1927-1931, by *Richard F. S. Starr*. Vol. II, Plates and Plans, pp. vi+41; 142 pls. and 44 plans. Harvard Univ. Press, Cambridge, 1937. \$10.00.

In the absence of the text volume the reviewer's comments must necessarily be brief. There can be no doubt that Dr. Starr directed the excavation of Nuzi according to the most approved modern stratigraphic methods and the plates of the present volume show that the publication will be most adequately illustrated. The plates are economically printed, with both sides of the page utilized and with narrow margins. This makes up for the employment of a somewhat prodigal scale and for the convenient, but expensive juxtaposition of half-tones and line-cuts on the same plate. The plans are unusually good, being full, accurate, and technically satisfactory. It is doubtful whether we have any remotely comparable material for domestic architecture from any other excavation in Western Asia. The extraordinary value of the architectural material makes the lavish scale of the plans pardonable. It does seem a little unnecessary, however, to have plans covering ten sq. ft., on a scale of 1:200, where a scale of 1:300 would have been amply sufficient and would have reduced the area of the printed plan by over one

half. The plan of Kudish Şaghr (No. 44) should have been reproduced on a scale of 1:500 instead of 1:200, thus reducing the printed area by over five-sixths.

The objects here published belong to three main groups. The prehistoric materials (mostly pottery, pls. 39-50, B) come from the lower strata of Yorgan Tepe and from the neighboring mound of Kudish Şaghr; they clearly date from the fifth and fourth millennia, but it will be difficult to place most of them in relation to other material from early Mesopotamia. The second group (pls. 50, C-56) belongs to the Dynasty of Accad, when Nuzi was called *GA-SHUR* (the pronunciation of this ideographic name is still uncertain); it may be dated (following the new Mari chronology) in the period between 2500 and 2300 B.C., perhaps in the twenty-fifth century. The third group (pls. 63, Q-133, C) belongs to the Hurrian Nuzi, which was destroyed by the Assyrians between 1425 and 1375 B.C., and probably about 1400. The remains from it may nearly all be dated about the end of the 15th century. The importance of this corpus of material for the comparative archaeologist can hardly be overestimated. In fact Hurrian Nuzi is just as important for the cultural history of Mesopotamia in the second millennium B.C. as Tell el-'Amārnā is for that of the Eastern Mediterranean basin. We await the appearance of Vol. I with impatience.

W. F. ALBRIGHT

THE JOHNS HOPKINS UNIVERSITY

LA CIVILISATION D'ASSUR ET DE LA BABYLONE, by *G. Contenau*. Pp. 260, figs. 52, pls. 16. Paris, Payot, 1937. 32 fr.

This is a second revised edition of the author's previous book *La civilisation Assyro-Babylonienne*, which was published 16 years ago. The additions and changes which, owing to the progress of science, proved necessary, make it an entirely new book.

After introductory remarks on "Géographie et histoire" and "Les explorations archéologiques et le déchiffrement des inscriptions," the subject is treated in three main sections: religion, art, and institutions. The second section is divided into two chapters called "Techniques et conventions" and "Les monuments" respectively.

The 250 pages are intended for a broader public and are limited to the essentials. The information which the book contains is well substantiated and will certainly prove useful, particularly to French

readers. I cannot help, however, raising a general objection. Contenau's book, like all existing books on the same subject — Meissner's *Babylonien und Assyrien* not excepted — shows the lack of historical perspective which was enforced upon the historian of earlier days, but is unjustified today. Our knowledge of Mesopotamian culture has increased to such an extent that any attempt to treat the available facts as homogeneous is not only utterly impracticable, but doomed in advance, since such an attempt is based on essentially faulty suppositions. During the three or four millennia which we know, more or less, thought and customs, art and institutions changed enormously, and not all such changes affected the whole Near East uniformly. Consequently the alleged Mesopotamian culture has been divided into a number of smaller units, which are more restricted in space and time. The historian of today should endeavor to describe the conditions which prevailed in these smaller units. The changes in society and government, in religion and art become comprehensible only when the differences of the various periods and territories have been duly recognized.

I am quite ready to admit that the time has not yet come for this type of cultural history. Whoever approaches this urgent task will find the knowledge of many details still lacking. Nevertheless, it is the cultural history at which we must aim today. This can be done by concentrating on the study of details. We should refrain, however, for the time being, from comprehensive presentations, of which a sufficient number exists already.

ALBRECHT GOETZE

YALE UNIVERSITY

MOUNDS IN THE PLAIN OF ANTIOCH: AN ARCHAEOLOGICAL SURVEY (The University of Chicago: *OIP.* xlviii), by Robert J. Braidwood. Pp. xi+67, maps XXVI, figs. in text 9. The University of Chicago Press, 1937. \$5.00.

Following hard on the publication of M. Jean Lasso's archaeological survey of a district of northern Syria comes Mr. Braidwood's admirable book. Braidwood has made an exhaustive survey of the mounds and ruined sites of the Plain of Antioch, i.e., of the low-lying alluvial plain of the 'Amq, northeast of Antioch. Characteristic of this undertaking is the accuracy of the topographical survey (described on pp. 2-4), the correlation of chronology with the stratigraphic data from Tell ej-Judeideh, and the care with which Arabic and

Turkish place-names have been recorded and explained (with the aid of Dr. A. Bruh, pp. 61-67). In short we have a model of its kind, which should be followed by many other archaeologists, utilizing their knowledge of the pottery of a district, their presence for long periods there, and their acquaintance with the natives and their dialects.

The chronological sketch of the pottery from Tell ej-Judeideh (pp. 4-8) is both concise and satisfactory. The reviewer does not have a single suggestion or correction to offer for the upper twelve strata. It is quite clear that there was no organized occupation of the mound during the age of painted pottery (the Halafian, Samarran, and Obeidian of Mesopotamia), so there must have been a gap of many centuries, perhaps of over a millennium, between strata XIII and XIV. Since the Halafian of northern Mesopotamia, like the contemporary Ghassulian of Palestine, was acquainted with the use of copper (Mallowan, *Iraq* ii, p. 104; iii, p. 26), it follows that copper had actually come into use long before stratum XIII, though probably after stratum XIV, which is roughly contemporary with the earliest level of occupation at Ugarit (Râs es-Shamrah).

With reference to the latest ware described, that from Kara Su and other village-sites (p. 44), it may be added that pottery of very similar type is abundant in recent village-sites in Palestine, regularly attributed by the reviewer to post-Mamlûk (i.e., Turkish) times.

The maps of distribution of occupied sites at different periods (pp. 43-59) are extremely interesting and suggestive. The author is careful to note the possible sources of error. Early strata are often quite buried by later remains, especially in the case of low mounds in a region where the level of the enveloping alluvium is constantly rising. The most curious fact is that so few sites seem to have been occupied during Judeideh VIII and IX (between 2400 and 1800 B.C.). This anomaly may probably be explained in part by supposing that there was little new foundation of towns and villages between the latter part of the third millennium and the Late Bronze Age (stratum VI), so that remains of VIII and IX would be nearly always buried under remains of VIII-VI. It must not be forgotten, however, that the period from 2200 to 1800 appears to have been one of the least dense occupation in the earlier history of Palestine, and that Mesopotamia was flooded by "Amorite" nomads between 2200 and 1900 B.C.

A few observations on Bruh's interpretation of

Arabic place-names may be in order. *'Andariyyah* must be derived from a personal name (the suggested *'ain dār* or *'andar*, Syr. Arab. "threshing floor," are out of the question). I suggest that it stands for *'Antariyyah*, "the place of (the hero) 'Antar," which may be a popular etymology of the original name of the site. The name *Damalkā* or *Dimalkā* stands for an Aramaic **Dēr-malkā*, "abode of the king". The name *Tell Fārūq* means simply "mound of Fārūq" (personal name). *Rihāniyyah* is simply "place of the Rihānī family" (originally from *raihān*, "sweet basil"). The name *Sāmarrā* is certainly Aramaic (originally *Shūr-marrāt*; for the early Accadian transcriptions cf. Sachs, *JAOS* 57, pp. 419 f.). *Tell el-Yahūdiyyah* means "mound of the Jewish woman."

In short, Mr. Braidwood and the Oriental Institute have given us an excellent treatment of the subject, one which should be imitated as widely as possible.

W. F. ALBRIGHT

THE JOHN HOPKINS UNIVERSITY

FOUILLES EXÉCUTÉES À MALLIA, DEUXIÈME RAPPORT: EXPLORATION DU PALAIS (1925-1926); Études Crétoises IV, by *Fernand Chapouthier* and *René Joly*. Pp. 53, pls. XXXV, figs. in text 12. Paris, Paul Geuthner, 1936. 100 fr.

This compact volume contains the results of the excavations of 1925 and 1926 on the site of one of the major palaces of Crete. It includes a clear verbal presentation of the material, adequate ground-plans, good photographs of the monumental remains, poor ones of the pottery, welcome profile drawings of the latter, and reconstructions of parts of the building. So far as it goes the publication is good, but one wonders why the results of a now complete excavation are parcelled out in seasonal reports rather than brought together in one definitive publication. Much that remains inexplicable in the present volume would doubtless be clear in a full account.

Part I deals with the architecture of the palace. The most interesting features of the central area, the fine central court with colonnades, the hypostyle hall, and the southwest section with the "sacrificial table" are satisfactorily explained. Evans (*PM*, iii, pp. 390-96) suggests that the "sacrificial table" may be a gaming board, but the present interpretation is the more convincing. It is to be hoped that the publication of the results of the later campaigns will clarify the still open problems of the southern and eastern sections.

The view that the height of the stepped entrance into room XIIIa was due to the desire to keep out rain water which flooded the court is not satisfactory. The adjacent southern wing had windows less than thirty centimeters above the level of the court, showing that there was no problem of flooding.

The northern wing centers around a secondary colonnaded courtyard. A building suggesting the megaron of mainland Greece was built in a corner of this court after the destruction of the palace. The excavators argue that it is contemporary with a late stage of the palace, since it rests directly on the pavement of the court without any intervening stratum. But it blocks the door from room XXI₁ into the court and is built over the abandoned column bases of the colonnade, proving that these were no longer in use when the megaron was built. It was an easy matter to dig through the accumulated earth in order to secure a firm foundation. Stratigraphic and ceramic evidence which might establish the exact date of this building are not given. It may be remarked parenthetically that a general exposition of the stratification of the palace would be welcome. The megaron recalls the late building at Phaistos.

The pottery found in the palace is chiefly of two distinct periods, equated by the authors to the E.M.III-M.M.I and the M.M.IIIb-L.M.Ia periods of Evans' classification. A few sherds of earlier type indicate the possibility of habitation in the Neolithic and E.M.I-II periods. On the evidence of the pottery two main stages are assumed in the history of the palace. The first began with its construction in the E.M.III period, and lasted into M.M.I. The palace was reoccupied in M.M.III, after a period of abandonment. A few changes were made at that time, including the addition of colonnades to the courts, but the earlier building survived practically unaltered until its final destruction, which is placed during the L.M.I period. This date for the destruction is based on the absence of pottery of the Palace Style, which appears at Knossos in the L.M.Ib period. This was, however, primarily a Knossian style, and wares of L.M.Ia type continued in use elsewhere into the L.M.II period. While its total absence at Mallia is striking, it is not improbable that the cause is geographical rather than chronological, and that the final destruction of Mallia occurred at the same time as that of Knossos and Phaistos.

JOHN FRANKLIN DANIEL

UNIVERSITY OF PENNSYLVANIA

DEUX ÉPÉES D'APPARAT DÉCOUVERTES EN 1936 AU PALAIS DE MALLIA; *Études Crétoises V*, by *Fernand Chapouthier*. Pp. ii+52, pls. XX and frontispiece, figs. in text 32. Paris, Paul Geuthner, 1938. 120 fr.

Two Minoan swords, one of outstanding interest, are discussed in the fifth volume of the "Études Crétoises" of the French School of Athens. They were discovered in 1936 during supplementary soundings at Mallia. They lay together under wall débris and fill, 80 centimeters below the M.M. III pavement of room III₁, on the floor of a magazine of the earlier palace. It is apparent from their position that they date from the last days of the early structure. Moulds found in the same stratum (see *BCH.* 1928, p. 501) indicate that this quarter contained a bronze foundry.

The hilt of the smaller of the two swords is well preserved and ranks among the finest examples of Minoan art. It is of bone with three annular mountings of gold, beautifully decorated in repoussé. The largest of these, from the inner face of the pommel, bears a superb representation of a tumbler balanced on his forearms, his back arched until the feet touch the head.

After a lengthy discussion of acrobatics the writer concludes that the posture depicted on the hilt is a natural one in tumbling, not a distortion dictated by the exigencies of space. He then cites later Asiatic parallels, in which this position is associated with the "saut périlleux" over a sword, and expresses the belief that the Mallia sword was used for this same ceremony in Crete. The technical and artistic details of the sword are admirably presented, with numerous drawings, and excellent photographs by Léopold Dor.

The writer decides that the Mallia weapons are the "older sisters" of the swords from the Mycenaean shaft graves, which are in part plunder from Crete, in part Helladic developments from Minoan prototypes. He argues that the Mallia sword is about a half a century older than the earliest examples from the shaft graves. This involves us in a serious chronological difficulty. If the earlier palace came to an end in M.M. I, as suggested in *Mallia I-II*, there is a gap of at least 250 years between the Mallia and the shaft grave swords. If, on the other hand, we follow Chapouthier in dating the swords ca. 1650 B.C., the pottery illustrated in figs. 2-3 needs a great deal of explaining. The complete publication by strata of the pottery from Mallia may clear up this and

other chronological uncertainties in the volumes of this series.

JOHN FRANKLIN DANIEL
UNIVERSITY OF PENNSYLVANIA

THE MEDITERRANEAN WORLD IN ANCIENT TIMES, by *Eva Matthews Sanford*. Pp. xxi+618, pls. 64. The Ronald Press Company, New York, 1938. \$4.50.

Professor Sanford's book has the merit of synchronizing Oriental, Greek and Roman history instead of treating the three fields in separate compartments. The new plan has much to commend it, since the various civilizations may be more easily compared, and their relations to each other at various periods are more clearly visualized. In such a treatment some repetition might be expected but this has been avoided with signal success. The condensation required in treating such a long span of history in comparatively small compass is inevitable, but reading lists, topically arranged, enable the reader to supplement the text by reference to recent literature on the subject. Sound judgment has been used in interpreting ancient sources and in accepting or rejecting modern theories. In economic and cultural development full use has been made of archaeological evidence. The sixty-four plates are well chosen and excellently reproduced. Eleven maps distributed through the volume also enhance the value of the book.

ALLAN CHESTER JOHNSON
PRINCETON UNIVERSITY

FOOD IN EARLY GREECE, by *Kenton Frank Vickery* (Illinois Studies in the Social Sciences, Vol. XX, No. 3). Pp. 97. Published by the University of Illinois, Urbana, 1936. \$1.00.

This useful monograph may be particularly recommended to the notice of field archaeologists who conduct excavations on sites of the preclassical period. Mr. Vickery has thoroughly scrutinized their reports, excerpting all evidence available relative to food and its production and preparation. It is evident that far too little attention has hitherto been given by archaeologists to the proper study and evaluation of such material which comes to light in abundance at almost every settlement investigated; much of it has been neglected and much of it, owing to lack of technical knowledge, has been reported only vaguely and generally. This is especially true with regard to animal bones and the exact iden-

tification of the species represented, and it is to be hoped that in the future excavators will make more effort to secure the assistance of specialists to deal with such remains.

In spite of the deficiencies of his sources, the author has managed to assemble an impressive amount of detailed evidence, which is methodically analyzed and arranged, and the monograph marks a definite advance in our understanding of this more human side of life and economic history in the prehistoric age. The work shows some inconsistencies in spelling and in the transliterations of place-names, and it is marred by a lack of careful proofreading, especially in the citations of the titles of publications; but the actual summaries of the evidence set forth in the reports examined seem to be accurate and trustworthy, and the material is clearly and fairly presented. The study should be welcomed as a serious beginning of the task of general interpretation in this field, and it points out, forcibly if tacitly, the opportunity and the obligation resting upon excavators to supplement and to complete the collection of the detailed, exact information required.

CARL W. BLEGEN

UNIVERSITY OF CINCINNATI

GREEK WOLF-LORE, by *Richard Preston Eckels*. Pp. 88. Philadelphia. 1937.

This dissertation, presented to the University of Pennsylvania, summarizes our knowledge of what the Greeks had to say of the wolf. The several chapters treat of: The Wolf in Greek Zoölogy, Greek Superstitions of the Wolf, The Werwolf and "Lycanthropy," The Wolf in Greek Religion, and The Wolf-Nurse.

Of ancient naturalists only Aristotle and Oppian had anything significant to say of the zoölogy of the wolf (p. 18). Moreover the commonly held belief that later writers on natural history, ancient and mediaeval, did no more than copy or comment on Aristotle is shown—at least so far as the wolf is concerned—to be quite erroneous (pp. 19-20). Of the various Greek superstitions about the wolf, some have survived into modern times, while others died hard. Thus, J. C. Scaliger was apparently the first to question the belief, of which the mediaeval schoolmen had offered several serious "scientific" explanations, that a man was struck dumb if seen by a wolf before he saw it. This section is not least interesting for the citations of Mediaeval, Renaissance, and modern parallels.

In his discussion of werwolves, Eckels takes up the general question of metamorphoses and classifies according to type the stories involving transformations into the form of wolves. He rightly questions (pp. 38-40) the dictum of A. B. Cook that "within the bounds of Hellenic mythology animal-metamorphosis commonly points to a preceding animal-cult." Whatever evidence, such as cult-names, priestly titles, and attendant animals, there may be for a possible theriomorphic stage of Greek divinities, it is certainly absurd to deduce (as one adherent of the Cook school recently did) from the Leda story, for example, that the chief deity of a certain tribe was a swan.

By far the most important chapter is that dealing with the wolf in Greek religion. Both folk etymology, and, as a result of this, myth, connected the wolf with the Arcadian cult of Zeus Λύκκιος. The real meaning of the epithet Λύκκιος still evades investigators, but a derivation from λύκος, "wolf," seems impossible, and Eckels suggests that the word may be pre-Hellenic, and therefore of indeterminate meaning (pp. 54-5). He rightly questions the existence, in historical times, of human sacrifice in the cult. Not only did the Greek excavations of the altar, which uncovered a deposit of bones and ashes, undisturbed since the fifth century B.C., disclose no traces of human bones, but the literary evidence, when analyzed, amounts to little more than the passage in the pseudo-Platonic *Minos*, which, in turn, was probably derived from Plato's statement in the *Republic* that there was a μῦθος regarding human sacrifice to Lycaean Zeus (pp. 50-60). Of Apollo's epithets we must distinguish, as did the ancients until Roman times, between Λύκειος and Λύκκιος, the former epithet referring to wolves (perhaps as "wolf-averting," a special aspect of Apollo Ἄλκιος), the latter to Lycia, and neither to light (pp. 60-6).

The work is well written and shows a salutary skepticism on the part of the author towards certain views which have too often been accepted without proper consideration. There is a useful *index locorum*.

FRANCIS REDDING WALTON

HAVERFORD COLLEGE

SATYROI, by *Frank Brommer*. Konrad Triltsch Verlag, Würzburg, 1937. Pp. 70, figs. 19. RM. 3.

The author traces the development of horse-beings and goat-beings as manifested in vase-

paintings, terracottas, bronze figures, and other art objects. His purpose is to treat all questions that are suggested by the one word of his title: the origin, history, and nature, of goat-beings, "Dickbauchtänzer," and Sileni; and the origin of tragedy and the Satyr-play. He is therefore principally interested in the evidence from the sixth and fifth centuries and earlier.

He wisely refrains from discussing the etymology of the words σάτυρος, σιληνός, τίτυρος, and Πάν, but at the outset he explains how these terms are employed in his essay. He avoids the name Satyr as much as possible; the beings compounded of men and goats he refers to simply as "Bockwesen"; but he calls certain goat-figures Pan when a representation of the god is intended. By Sileni he means the horse-beings (excluding Centaurs of course). He bases his practice upon the ancient usage: the meaning of σάτυρος underwent several changes in antiquity; while early goat-beings were called simply τράγοι, or sometimes πᾶνες, since a plurality of Pans is attested in fifth-century literature. The word τίτυρος is dialectical, and seems to be equivalent to σάτυρος.

The author's examination of the evidence yields the following results. Pan and the goat-beings have their origin in Arcadia and are not found outside the Peloponnesus before 500 B.C.; there is no record of their being called Satyrs until the first century B.C. The "Dickbauchtänzer," whose original home is also the Peloponnesus, are mythical beings; they are the Satyrs of Hesiod, since they meet all the specifications; and they are gradually displaced by Sileni on Attic vases. Attica is the home of the Sileni, though they spread through all Greece by 550 B.C.; in the Peloponnesus they were called Satyrs. This name came to Athens with Pratinas, when he introduced the Satyr-drama. Tragedy is not derived from the Satyr-drama, but from a Satyric type (and this is Aristotle's meaning); it takes its name from the goat-choruses of the Peloponnesus (the τραγικοί χοροί of Herodotus V, 67, 5). Thespis improved upon the work of Kleisthenes of Sicyon and of Arion by introducing the separate actor and by ceasing to dress the chorus in animal costumes; and with the other early tragic poets he produced plays that had other than Dionysiac subjects. Then Pratinas introduced the Satyr-play as a conservative move, to restore to the drama something of its former Dionysiac character. The Attic Satyr-plays had a chorus of Sileni, not of

goat-beings. This explains why the leader of the chorus is called the father of the rest.

There is little that is new in these conclusions. One can say, however, that Mr. Brommer has presented the argument very clearly and forcefully. The book's chief value lies in its complete lists of vase-paintings and other works of art that show the various Satyr-creatures as they were conceived in the sixth and fifth centuries. The essay ends with a list of 117 vases that show players in the Satyr-drama. The notes present lists that document the several subdivisions of the subject. The book provides a brief table of contents, but lacks an index.

JOSEPH E. FONTENROSE

UNIVERSITY OF CALIFORNIA

VIERGESPANNE IN VORDERANSICHT, by German Hafner (Neue Deutsche Forschungen, Band 166: Abteilung Archäologie, Band 2). Pp. 133, pls. 3, figs. in text 9. Junker and Dünhaupt, Berlin, 1938. Paper, RM. 6.30.

In this account of the history of the frontal quadriga a subject of wide scope is briefly but thoroughly encompassed. Dr. Hafner lists, describes and compares monuments ranging from the Geometric period to modern times. One of the main conclusions is that neither the frontal quadriga nor the quadriga in free sculpture owed its origin directly to the other, but that both developed along parallel lines, with some borrowings by free sculpture. The catalogue of monuments shows an abundance of archaic specimens (155 are listed), only 13 (all seemingly fourth-century) from all subsequent Greek periods. The gaps are left unexplained, but the survival of the motive through the Hellenistic period is inferred from its widespread appearance in Roman art (pp. 72-3, and Chapter C), and from a third-century Indian example (pp. 74-5). In this third chapter there is a lengthy discussion of free-sculpture quadrigae, which the author endeavors to reconstruct, even when they are known only through literary tradition. The third chapter treats Roman and later survivals, and there is a closing excursus on the "rising frontal quadriga" (i.e., with only the upper part visible), which provides a small but unbroken series of monuments (to the Etruscan mirrors, p. 132, no. 3, add Ducati, *Arte Etr.*, pls. 241, 245; Gerhard, *Etr. Spiegel*, pls. 78 and 196, and V, p. 220).

The material is logically arranged and easy to follow, although the lists (none for Chapter C)

do not wholly compensate for the lack of a subject-index. At times the argument becomes involved in inconsistencies. For example, any deviation from the normal pattern of the heads ("yoke-horses in, trace-horses out") is classified as "*eine italische Sonderform*" (p. 116; hence the gem, Furtw., *AG.*, pl. 10, 6 is thought Italic, p. 38, n. 22); but an Indian relief (above) showing the same peculiarity is cited as evidence that the motive existed in Hellenistic Greek art. Again, the fact that the multitude of "profile" and "wheeling" chariots occupies the very period during which the frontal quadriga was avoided weakens the assumption that all free-sculpture quadrigae were, in primary conception, "frontal." Nor does it seem likely that Lysippos "invented" the galloping quadriga in free sculpture (p. 97), since that theme had centuries ago begun to appear in profile on Greek vases (Sophilos; François vase).

The treatment of the earlier b.-f. vases suffers from the author's use of the inner detail of the horses' chests as his sole criterion of date and style. Such a narrow approach can be only partially effective (e.g., nos. 13 and 39 seem arbitrarily connected). The presence of arcs above the collar (pp. 23 f.) is sometimes too rigidly applied as a sign of late date (as for the Hoppin Krater, no. 28), sometimes altogether ignored ("Group E" vases: arcs lacking, but put into later series, after 540 B.C.). The most important indications of chronology (position of heads; spacing; tapering of bodies; other proportions) are nowhere mentioned.

There are also some misstatements and errors of judgment. Nos. 17-19, 26 and 28 are accepted without question as "by Sakonides," although Rumpf's greatest admirers regretfully confess that they see several different painters in his *Sakonides*-list (see M. Robertson, *JHS.* lvii, 1937, pp. 266 f.); to me not even all these five vases appear to be by one hand. No. 1 (alabastron in Geneva, *Genava* ix, 1931, p. 126, fig. 1) is not Corinthian, but Boeotian (Payne, *Necrocorinthia*, p. 202, no. 11); no. 14 (Copenhagen kantharos) not "provincial Attic," but Boeotian (so Blinkenberg and Johansen); no. 30 not "provincial Attic," but Eretrian (the distinction is important); and no. 124 not in Oxford, but in B.M. No. 37 (Acropolis 474; Gorgon Painter) is dated (pp. 20, 24) without reference to Payne's attribution and dating (*Necrocorinthia*, pp. 192, and 344). P. 29, "no other frontal quadrigae on

vases by 'known' painters," cf. no. 83 (Menon Painter); nos. 49-50 (Edinburgh Painter; see also additions, a-o, below). P. 35, on Langlotz' dating of Temple "C" at Selinus, not "*die zwanziger Jahre*," but "*im letzten Jahrzehnt des 6. Jhdts.*" P. 42, Buschor's interpretation of no. 35 (Acropolis 464) as "The Departure of Diomedes" (*FR.* iii, 216) is more convincing than the present argument that Tydeus himself (inscribed, at r., in mantle) is the departing hero; for the restoration of the fragment cited as a parallel is equally conjectural (no. 33, p. 41). Finally, nos. 11, 12 and 26, all early ovoid neck-amphoras, are here called "*Bauchamphoren*."

Several b.-f. specimens can be added to Dr. Hafner's list. (a) ATHENS, from Vari. Kantharos. *JHS.* lvii, 1937, pl. 6, 4. (b) ATHENS, Acropolis 759. Fragments. Graef, I, 2, pl. 48, and Pease, *Hesperia* 1935, 219, fig. 2, 2. (c) CAMBRIDGE and LONDON, from Naukratis. Fragments of kantharos. *CVA.* Cambridge 2, III H, pl. 21, 40, and *JHS.* xlix, 1929, p. 258, no. 14, pl. XV, 17. This piece is doubly interesting because it adds to the few identifiable mythological scenes "The Chariot of Achilles" (see Beazley and Payne, *loc. cit.*, and Lamb, *CVA.* Cambridge, p. 43), and because the drawing strikingly foreshadows the archaizing style of the Amasis Painter, thus forming a link between his frontal quadrigae and the early "ornate" pieces. (d) CAMBRIDGE, from Naukratis. Fragment. *CVA.*, *loc. cit.*, pl. 21, 33. (e) ATHENS, Acropolis 797-8. Fragments. Graef, I, 2, pl. 53, and Rumpf, *Sakonides*, pl. 17, d, no. 69 (attr.). (f) CAMBRIDGE (Florence, and Toronto? see Lamb, *op. cit.*, p. 42), from Naukratis. Fragments of "Droop" Cup. *CVA.*, *loc. cit.*, pl. 21, 26 and 31. Nonsense inscriptions. (g) ROME, Villa Giulia. Fragment of band-cup. *CVA.*, 3, III He, pl. 25, 5. (h) ATHENS, from N. Slope. Fragment. Pease, *Hesperia* 1935, p. 252, fig. 19, no. 65. (i) PHILADELPHIA. Neck-amphora; fragmentary. *MJ.* xi, 1920, p. 58, fig. 35. (j) PRINCETON. Panel-amphora, unpublished. (k) ATHENS, from the Agora. Hydria, unpublished. *AJA.* xxxvii, 1933, p. 292. (l)-(o) Four vases by the Edinburgh Painter. Haspels, *BFL.*, p. 88, n. 2 and App. IX, nos. 6, 71, 80, 86. (p) PALERMO 2761. Lekythos. Haspels, *op. cit.*, p. 88, n. 3. *Rising frontal quadrigae* (131-133): see Haspels, *op. cit.*, pp. 120 f., where 15 b.-f. examples are listed (8 new) and discussed.

The large mass of material presented by Dr. Hafner will be useful to archaeologists in every

field, particularly to students of vases and sculpture. On some details the reader may disagree with the author's conclusions, but the book convincingly demonstrates the value of tracing through various media the evolution of a stock motive.

D. A. AMYX

UNIVERSITY OF CHICAGO

ALTERTÜMER VON PERGAMON, Band X, DIE HELLENISTISCHEN ARSENALE, by *Akos von Szalay* and *Erich Boehringer*. Pp. viii+63, pls. 44. Staatliche Museen zu Berlin. Berlin, Walter de Gruyter and Co. 1937. RM. 48.

More than fifty years ago, in the earliest days of modern archaeological research, the first volumes of the publication recording the excavation of the great Asia Minor site, Pergamon, set a high standard of excellence. As both field methods and publication technique have advanced in accuracy and increased in scope through the years, the Pergamon expedition has maintained its place in the first rank. The latest volume of the series is no exception; it is an example of the finest of present-day scientific methods of excavation.

As explained in the Foreword, the description of the buildings and the proposed reconstructions together with most of the drawings and plans were made by von Szalay before his untimely death. Certain revision of this material and all the remainder of the contents: the interpretation, the detailed account of the small finds, and the dating, are by Boehringer.

The area dealt with is the irregular rectangle of ground just below and to the north of the summit of the acropolis, long known as "Garten der Königin." It is enclosed on all sides by walls of Byzantine date, which are built on remains of the Eumenes fortification on the east and west sides, below which in turn pieces of the original so-called Attalid wall, built under Philetairos (283-261 B.C.), are clearly distinguishable, as also on the north side.

Within this precinct lie the foundations and lower parts of the walls of five long, narrow, rectangular buildings of very particular architectural interest. For increasingly, as greater experience is brought to bear on excavation, archaeology is adding to the extremely limited number of types of buildings formerly recognized in Greek architecture. A detailed description of the stone walls of these buildings, both those of the outside and the interior floor-supports, is given, and re-

construction of floors and walls is attempted with careful and complete dimensions in centimeters, ells, and feet. Szalay had believed the halls fit a system based on the ell, but Boehringer shows, by detailed calculation, that several variants of the regular Pergamene foot (ranging from 34.7 cm. to 35.1 cm.) work out more satisfactorily. A different foot rule was used for each building but the same one throughout the building.

The walls of I and II are to be restored in stone, those of III, IV, and V in wood. All (except II which had five interior divisions, each of which had an entrance on the long side of the building) were of one long room and were entered at the ends only. Only I, wider than the others, needed interior supports for the pitched roof.

Evidence for the dating of these buildings is derived from their relation to the fortification wall, sherds, tiles, etc., in the fill around them, and a general consideration of Pergamene history. I and II are contemporary with each other and with the "Attalid" wall on the east, against which II is built, hence they must date 283-261 B.C. III was built somewhat later, and was followed shortly by IV and V. An accurate date for these three cannot be ascertained, but, to judge from the roof tiles with their royal stamps, they must date from the period of the kings. Because the size of the numerous cannon balls found around these buildings indicates a large supply of heavy artillery such as was used in attack, Boehringer suggests that these arsenals date from the period of the aggressive Attalos I, rather than the defensive Eumenes II, but for this there is, of course, no proof. The whole group belongs solely to the great Hellenistic era of Pergamon, for III at least was destroyed by fire probably about 133 B.C. or shortly after and the others fell into disrepair soon after. The precinct was never used by the Romans; heavy rains washed down a convenient covering from above, so the few wretched Byzantine habitations and graves did not disturb the ruins.

To answer the question of the purpose of these so-called arsenals, Boehringer notes that there are no Greek parallels of any kind in existence (note, however, that the large building against the city wall of Athens on the Pnyx, dating from the end of the fourth century, has recently been recognized by its excavator, Dr. Homer A. Thompson, as an arsenal); that the famous specifications for Philo's Arsenal in the Piraeus call for a more complicated interior arrangement, and that the numerous Roman buildings of similar plan were in

some cases granaries, in others arsenals. He suggests that I, by its greater width, may have housed grain for the garrison stationed in the barracks adjoining the precinct, that II may have served for other food stuffs and various small military equipment, but that III, IV, and V probably housed the cannon which projected the numerous balls found lying around these buildings. Pithoi without covers, sunk in the ground around these frame structures, probably held water and show the precautions taken against fire in buildings of considerable value.

The small finds are described and illustrated carefully, first the chance finds which include two unidentified architectural fragments, an inscription, several amphora handles, Byzantine sherds, a hoard of gold coins of Andronikos II and Michael IX, and Byzantine tiles used to cover graves. There follows an admirable account of the finds made within the buildings and in stratification around them: a bronze shield; iron nails, clamps, bands from cannon, and catapult points; sherds of glazed and of kitchen ware from the late fourth century through late Hellenistic times, well tabulated (there is, however, no additional evidence on the vexed problem of dating Hellenistic Pergamene pottery); the pithoi with their inscriptions carefully recorded; roof tiles and cannon balls. The latter two are treated with particular care at considerable length, with the details listed in valuable tabular form as well as described in the text. These two parts will prove especially useful. Nearly all the many varied stamps on the tiles are new. The discussion of the 961 σφόνδυλοι found round the Arsenals makes an important contribution to our knowledge of ancient poliorcetics. Similar balls were found in the early days at Pergamon but without context, and so were considered mediaeval. Those found in this area are indubitably Hellenistic and shed valuable light on artillery of the period. Fifteen different calibers are represented in the 961 examples which vary considerably in their diameters within the same caliber, owing to the varied porosity of the local andesite of which they are made. These include calibers not mentioned by Philon of Byzantium; on the other hand two of Philon's calibers are not represented. Two 3-talent balls disprove current opinion that this caliber, though mentioned by authors, was never used. Heavy artillery forms the greatest part of the lot, 759 balls being of 30-60 mina caliber, but Boehringer warns that this is no proof that the Ro-

mans may not have carried off the lightweight equipment. He adds an interesting suggestion that the use of heavy stone shot, considered to have begun under Alexander, may really date back earlier and that the Euryalos of Dionysius I at Syracuse is more easily understood if we recognize in the original construction emplacements for heavy cannon.

A convenient conclusion which treats of dating is followed by complete Indices of Plates and Text. The generous plates deserve special commendation. The photographs are of unusual technical excellence and real beauty, well chosen to show the Pergamene countryside dominated by the precinct, as well as details of wall construction and the small finds, on which the inscriptions and stamps are gratifyingly clear. Equally fine are the drawings of sherds, tiles, plans, and reconstructions: clear cut, well arranged, and provided with complete dimensions. In a work of such first quality throughout, one hesitates to mention a few minor misprints: on p. 10, fourth line from the bottom, read 5 for 15; on p. 48, note 1, read IX for X; on p. 58, Tafel 24d read Südosten for Südwesten; on Plate 17b read Südostecke for Südwestecke. Not only the field archaeologist, but also the student of architecture and of military tactics is indebted to Boehringer for this thorough and painstaking study with its dependable conclusions, admirably and usefully presented.

LUCY T. SHOE

MOUNT HOLYOKE COLLEGE

COROLLA LUDWIG CURTIUS. Vol. 1, text, pp. vi+224; Vol. 2, pls. 72. Kohlhammer, Stuttgart, 1937. RM. 75.

This beautifully printed and superbly illustrated collection of short articles, assembled to honor a distinguished archaeologist's sixtieth birthday, cannot fail to raise in an American reviewer's mind the misgivings which always gather close about that ancient and honorable, but uneconomical and unmethodical institution, the *Festschrift*. In the present instance the contributors' names are, as often, a gallery of professional fame; but, as usual, nearly every one has given generously and gallantly of his second-best. What scholar finds it easy to recall epochal or even much first-rate material published through the medium of the *Festschrift*; or, where such occurs, has not resented its bibliographical seclusion? Since universities and working libraries must make up their budgetary minds whether or not to

purchase these publications, it is a pertinent question whether in today's combination of overplentiful scholarly production and general economic restraint the honorific volume of miscellanea is still helpful to our profession. Should not such methods of publication perhaps yield to a policy of microfilm libraries to promote the dissemination of coherent research with unlimited illustration at limited cost? May the next distinguished sexagenarian's birthday produce a *Corolla Microphotographica*!

It would be invidious to select for commendation the more colorful leaves in the present garland, but perhaps useful to sort them for the prospective purchaser. In addition to more than a dozen articles of literary, aesthetic, and rather widespread interests, the studies centering on specific works of classical art comprise contributions on sculpture by Arndt, Horn, Langlotz, Muthmann, Rodenwaldt, Ed. Schmidt, and Schrader; on figurines by Sieveking and Wolters; on vases by Bulle, Hampe, Kraiker, and Technau; on architecture by von Gerkan; and on minor arts by Boehringer and Crous. The mere names should be sufficient counter-guarantee to the reviewer's splenetic dislike of their form of publication.

RHYS CARPENTER

BRYN MAWR COLLEGE

ETRUSCOLOGIA, 1935-36, by Aldo Neppi Modona. Pp. 40 (603-643). Estratto da *Aevum*, Rassegna di scienze storiche linguistiche e filologiche, Anno xi, Fasc. 4, Ottobre-Dicembre 1937. Milan, Società editrice "Vita e Pensiero."

This is one of the valuable bibliographies prepared periodically by Neppi Modona for the review *Aevum*. The present fascicle includes a comprehensive survey of all publications of 1935 and 1936 regarding the various aspects of Etruscan civilization. Short abstracts of books and articles are given and all items are conveniently numbered. To readers outside Italy this bibliography has a particular appeal because of the many items drawn from local Italian publications which would otherwise easily escape attention. Critical remarks are, of course, out of place with a bibliography, except as far as correct rendering of names is concerned. Thus the name in XI, 252 should be Pryce, not Price, and in X, 48 Lake, not Leake. For reason unknown the title of the Bulletin of the Rhode Island Museum is given in French. Also the magnificent situla of that museum might have

been mentioned in the abstract. Such small accidents do, however, happen in any bibliography and in spite of them Etruscologists will be grateful for having their work much facilitated by Neppi Modona's erudite and careful compilation.

GEORGE M. A. HANFMANN

HARVARD UNIVERSITY

ALTETRUSKISCHE PLASTIK I. Die menschliche Gestalt in der Rundplastik bis zum Ausgang der orientalisierenden Kunst, by Georg M. A. Hanfmann. Pp. xii+135, figs. 15. Konrad Triltsch, Würzburg, 1936.

This is an outstanding doctoral dissertation, a penetrating analysis of the scanty remains of early Etruscan sculpture. Its object is to determine how far this sculpture is Italic, how far Etruscan, how far borrowed from Egypt, Syria, Phoenicia, Cyprus, Asia Minor, or Greece. Such an examination involves, as the author has well understood, the investigation not only of the various motives found in Etruscan sculpture, such as acrobats, archers, riders, men between horses, women holding their tresses, women with their hands against their thighs, etc., but also of the various treatments of these motives; the motives must be tracked to their geographical sources and then it must be determined how far either the native Italic stock or the immigrant Etruscans expressed themselves in their modifications of these motives. This is a difficult task, of which the author has acquitted himself well; he is sensitive to small differences of style and keen in identifying the influences which produced them.

His main conclusions are: the only pre-Etruscan sculptures are the primitive idols of Latium. The Italic people first represent the human figure under the influence of the Orient, which the Etruscans transmit. The motives are overwhelmingly oriental but are from the first treated in the Italic style. By the middle of the seventh century oriental influence was on the wane and the Italic element in Etruscan art became the dominant factor.

It is noteworthy that among the foreign arts which influenced the genesis and growth of Etruscan sculpture, the art of Greece played but a minor part, even in the years when her painted vases were widely imitated in Italy. This is perhaps due to the fact that plastic ornaments for vases and other bronzes were commoner in the East than in Greece. Only one or two plastic motives, according to the author, were taken over

from Greek vases. The first is that of the "man between horses" or a man holding the bridles of a pair of horses. Two of the three examples of this motive cited by the author come from trench tombs the contents of which are preserved in the University Museum, Philadelphia. In one of these tombs (Narce 43) are several bronze disks, slightly convex and provided on their upper surface with a central knob and below with a post that is almost central. This type of disk has been generally thought to be a part of trappings of a horse, but it is exactly like the bronze disks on the helmet from Krain in the Berlin Museum (*Reallexikon der Vorgeschichte* s.v. *Helm*, Pl. 88a), so that it is more plausible to believe that they are the remains of wickerwork and leather helmets. These disks are found in the Warrior's Tomb, Tarquinii, the Circolo di Bes, the Circolo dei Acquastrini, and the Circolo delle Pellicie at Vetulonia, and I should be inclined to date to approximately the same period all the tombs in which they occur. Can we fix that date? The pottery and gold work from the Warrior Tomb, Tarquinii, afford the answer. Furtwaengler pointed out in the *Archaeologische Zeitung* 1884 that the gold plaque from the Warrior's Tomb, Montelius Pl. 286, 7, was contemporary with the small gold plaque from the Regolini-Galassi Tomb, *ibid.* Pl. 341, 5, and the elaborate plaque from Praeneste, *ibid.* Pl. 378, 4. The handleless bowls from the Warrior's Tomb are exquisitely light. One, *ibid.* Pl. 290, 2, has a row of dark dots on a light ground and another a row of light dots on a dark ground. Another of these bowls, *ibid.* 14, has a zone of alternately red and black birds, and on its base, about a central disk of brown, are narrow stripes, red, brown and reserved in succession. These vases cannot, therefore, be Geometric. But all the vases in this tomb seem to have been decorated in the same workshop, if not by the same hand. The conclusion seems inevitable that they derive from Subgeometric, not Geometric, prototypes, and date from the early seventh century. Likewise the other tomb-group in Philadelphia, which contained a similar vase with plastic decoration of a man between horses, is connected with the Warrior's Tomb, in that it contained six bronze pendants like those which are suspended on the inside of the shield from the Warrior's Tomb. Now it makes no difference to Hanfmann's argument whether this Greek motive of a man holding horses was first used by the Etruscans shortly before or shortly after 700 B.C.; nor again

is his argument affected if the amber figurine from the Circolo di Bes, No. 3 on p. 54, or the head from the Circolo dei Acquastrini, No. 1 on p. 80 be assigned to a later date. In fact the picture as Hanfmann has drawn it becomes a little clearer if the dates are compressed within a shorter span.

The author's account of the Pietrera sculptures is as clear and complete as it can be made in view of the unhappy history of the Pietrera Tomb. Here again I should favor a later date; the patterns with which the sculptor has rendered the knees in Montelius, Pl. 199, 8, and 10, seem to me derived from archaic Greek sculpture.

No serious student of Etruscan archaeology can afford to dispense with this book. It is difficult to read but is full of careful observations and shrewd deductions. The bibliography, which runs to six pages, is evidence of the thoroughness with which the author has worked.

EDITH H. DOHAN

UNIVERSITY MUSEUM
PHILADELPHIA

ETRUSCAN TERRACOTTA WARRIORS IN THE METROPOLITAN MUSEUM OF ART, by *Gisela M. A. Richter* (The Metropolitan Museum of Art Papers, No. 6). Pp. 18., pls. 24. Metropolitan Museum of Art, New York, 1937. \$2.00.

We have become so accustomed to expecting sumptuous publications from the Metropolitan Museum that we perhaps take them too much for granted and even complain that they might be more elaborate. With some such apologetic preface the reviewer ventures to bewail the absence of colored plates to add the final touch of perfection to these magnificent illustrations of the two most important pieces of Etruscan art in America. Color is of the very essence of the fictile medium of these statues; and no one who has not seen this strangely contrasted pair of heroic warriors in the clay, with all their color-tones upon them, has quite divined the breath-taking gasp and sudden excitement which they are capable of producing in even the most hardened connoisseur of ancient art. Hence it seems a pity to have spent so much on full-page illustrations and fine typography in order to produce so exquisite a monograph—and yet fall short of the true effect.

Miss Richter's text combines that accuracy and fulness of descriptive detail with wide-ranging perspective and cool clarity which have always marked her museum work. Where an entire treatise on Etruscan art might have enticed the

less experienced, she gives us only what is pertinent and omits nothing—save the colored plates.

RHYS CARPENTER

BRYN MAWR COLLEGE

RITUAL AND CULTS OF PRE-ROMAN IGUVIUM, by Irene Rosenzweig. Studies and Documents, edited by Kirsopp Lake and Silva Lake, Vol. IX. Pp. 152. London, Christophers, 1937. 15s.

A cornerstone in the foundations of our knowledge of pre-Roman Italy, the Iguvine tables have received much attention in recent years. Von Blumenthal (*Die iguvinischen Tafeln*, 1931), Devoto (*Gli antichi Italici*, 1931; *Tabulae Iguvinae*, 1937), Goidanich (*Historia* viii, 1934, pp. 237 ff., 579 ff.) and Whatmough (*The Foundations of Roman Italy*, 1937, pp. 196 ff.) have made valuable contributions to the study of this fascinating but perplexing document. Emanating from the pen of noted philologists these studies were primarily based on a philological interpretation of the text. Rosenzweig attacks the subject from a different angle. Her purpose is to examine the Iguvine tables from the point of view of a historian of religion. As implied in the title she further narrows her subject down to the study of the religious life of one community and does not attempt to expand her investigation to a general study of pre-Roman religion in Italy, or even in Umbria. That a number of problems of religious character are clearly stated is a valuable consequence of this self-imposed limitation. The author also deserves praise for her attempt to settle the topographical problems on the site. Goidanich, who has also investigated the site, believes he has found traces of two ancient gates. His Umbrian Iguvium differs from that of Rosenzweig in size and in the location assigned to the three gates. As a readable account and a conscientious commentary Rosenzweig's book has value for students who want an introduction to the religious problems of the Iguvine tables.

Unlike some of her predecessors Rosenzweig prefers to err on the side of timidity rather than temerity. For her interpretation she draws mainly on the Classical sources, wisely leaving the purely philological questions to the expert care of Professor R. G. Kent. Having thus eliminated the dangerous ground of archaeology and comparative religion she escapes the Scylla of uncritical hypotheses but is driven dangerously close to the Charybdis of eclecticism. Too many of the problems involved can only be advanced toward

solution through co-ordination of philology, comparative religion, and archaeology. As Devoto says "in questa direzione sta l'unica possibilità di progresso" for the study of Italic religion.

Let us briefly review some of the problems which are raised in Rosenzweig's book. First the date of the Iguvine tables. The writer correctly states that the older tables were inscribed in the fourth or the third centuries B.C., but seems to have rather extravagant notions about the period in which their contents were formulated. It is extremely unlikely that "the Etruscan system of town-planning was found at Iguvium long before the domination of the Etruscans." Etruscan cities go back to the seventh century B.C. What we know archaeologically of Umbria discourages any idea of organized settlements of town character before the late sixth century at the very earliest. From this and other indications it would hardly seem possible to date the contents of the tables earlier than the late sixth century, which, of course, does not preclude the possibility that some of the rites and beliefs alluded to in the tables are of much earlier character.

Interesting is the view of the writer that the lustral procession moved counter-clockwise while purifying the *arx*.¹ This direction toward the left is unusual (Eitrem, *Opferitus der Griechen und Römer*, pp. 29 ff.), but seems to have been also followed in foundation rites (Servius V, 756). Archaeological evidence seems to bear out Rosenzweig's conclusion (Altar of Domitius Ahenobarbus, Strong, *Roman Sculpture*, pl. 5; further material in Lehmann-Hartleben, *Die Trajanssäule*, 1926, pp. 24 ff.). The matter cannot, however, be regarded as settled until a complete collection of material is made. Thus on the important early pediment from the Via San Gregorio, Rome—which is now re-assembled in the Antiquario Comunale—the procession would seem to move toward the left, but the animals are clearly led to the right. (Stuart Jones, *Pal. Conservatori*, pls. 121 f. The fragment, which shows the legs of animals, is unpublished.) It is noteworthy that in other sacrifices, for instance, in the sacrifice to the Lares, the processions are shown moving to the right.

Finally, a few remarks on the deities of the Iguvine tables. The curious flexibility of this pantheon, in which deities are distinguished by adjectives, which in their turn emerge as inde-

¹ This problem was pointed out to the reviewer by Professor A. D. Nock.

pendent divine powers is perhaps the most striking feature. These deities oscillate curiously between a rather pronounced personal anthropomorphic aspect and the more abstract vagueness of natural powers and functional forces. Irresistibly the question presents itself: how far were these deities thought of in anthropomorphic terms? For the early epochs we cannot reach any results except by deduction. The final stage of anthropomorphism, however, the stage that creates cult images and mythology, leaves tangible results and allows us to recognize the situation in Italy at the time when the Iguvine tables were inscribed. In view of the many other similarities between Rome and Iguvium their difference in this respect deserves emphasis. In Western Italy the late seventh and the sixth centuries are the period when an anthropomorphic pantheon is definitely formed; Rome, Latium, Etruria, and Campania then form a cultural unity. Interesting evidence is afforded by the figurative terracotta revetments of temples. The border-line of the region in which remains of archaic temples were found, runs from Pompeii to Bologna, with Spoleto an outpost in the East. Rome is an important center of temple building; it can boast, in fact, one of the earliest temples of Central Italy (ca. 600 B.C., Van Buren, *Terracotta Revetments*, p. 51, pl. 21, 1). That these temples of the sixth century contained images need hardly be proved, but if proof is wanted the heads from Celle, from Satricum, the colossal head in the Metropolitan Museum, and statues represented on vases and panels afford sufficient evidence (Giglioli, *Arte etrusca*, pls. 78, 5; 199; 108, 1. Richter, *Met. Mus. Papers* vi, p. 16, pls. 15 ff. Ducati, *Pontische Vasen*, pp. 14 f., pl. 13; cf. Gordon, *Cults of Lanuvium*, 1938). On the crest of the same wave, Etruscanized Greek deities, Minerva, Herakles, Apollo, Dionysos achieve popularity. Their Etruscan representations are first found in this period. Family relations and mythology were bound to be introduced once the anthropomorphic view had advanced so much along the Greek lines. Rome shared this religious transformation of the sixth century.

But east of the Appennines and in the mountains of Central Italy the process was much delayed. To the reviewer's knowledge no traces of archaic temples or images have been found in Umbria. Characteristically, also, such popular deities of Etruria and Latium as Juno, Minerva, Herakles, and Apollo are entirely absent from the

Iguvine tables. The reviewer is convinced that the tables represent a transitional stage in the religious history of Umbria at a time when it was undergoing influence from Etruria as a natural result of the proximity of such centers of late Etruscan civilization as Cortona and Perugia. Anthropomorphic elements began to gain ground, and such Etruscan features as triads and temples were adopted. The shrine of a minor god, Coredius, is apparently mentioned in the tables.

But after all the Iguvine tables are in the main a reflection of the religious feeling of a simple agricultural community for whom the personified gods of images and temples are less important than the primitive forces that hover over their towns and fields. It is not to Roman or Etruscan art, but to the drastic rusticity of the *situlae* of Certosa and Sesto Calendo (MacIver, *Iron Age*, pl. 14; Giglioli, pl. 82) that we should go if we want to visualize the simple dignity of the Iguvine *Fratres Atiedii*.

GEORGE M. A. HANFMANN

HARVARD UNIVERSITY

THE CLOTHING OF THE ANCIENT ROMANS, by Lillian M. Wilson. The Johns Hopkins University Studies in Archaeology No. 24, ed. by David M. Robinson. Pp. xiii+178, 103 figs. on XCV pls. Baltimore, The Johns Hopkins Press, 1938. \$5.00.

This book is an excellent and important study of the dress of the Romans. It is written according to the same sound and thorough method used in the previous volume by Miss Wilson "The Roman Toga," 1924, which was No. 1 in the same series. She combines the evidence from Latin literature, Roman sculpture and painting; and she illustrates her results with diagrams giving the shape of each garment, schedules of measurements referring to these diagrams, and drapings on the living or working model.

The first three chapters (pp. 1-35) are clear and useful discussions of the raw material, colors, dyeing, spinning, weaving, fulling, sewing, fastenings and jewelry used by the Romans. She might have shortened these introductory chapters by referring to Bluemner, "Technologie und Terminologie der Gewerbe und Kuenste bei Griechen und Roemer," 1912; and also to my "Griechische Kleidung," 1928, pp. 1 ff. Neither book is included in her bibliography on p. 173 f. But her independent study especially of purple (pp. 6 ff.), which she illuminates with 7 different shades of purple on

pl. I against only one shade in the "Roman Toga" (p. 119, fig. 75) is very welcome. The epinetron mentioned (p. 16) is not used to make the spun thread even, but for carding and making the raw wool smooth: cf. Hauser in *JOAI*, xii, 1909, pp. 80 ff. The loom of Penelope on the vase at Chiusi (fig. 6) would have appeared better with its important details had it been reproduced from *FR.*, pl. 142 instead of from the photograph by Alinari with consequent loss of detail, as noted (p. 18) by the author. The weaving of the Navajo Indians, rightly mentioned as a good parallel to ancient weaving on p. 24, is excellently treated in Professor Gladys Reichard's book "Navajo Shepherd and Weaver," 1936 (cf. her pls. Ia and V, fig. 2 on p. 60 with Wilson figs. 5-13).

Chapter IV ("The Toga") is a condensation of portions of the author's former book. She has found no evidence which would necessitate any change in her conclusions, yet I think it might have been useful to refer to the studies on the late Roman toga in Delbrueck, *Die Konsular-Diptychen*, 1929, pp. 43-58, figs. 16-24.

Chapter V (pp. 55 ff.) is a good discussion of the tunic and its stripes, and of the undergarments. The most important part of the book, however, is, in my opinion, chapters VI-IX (pp. 76-129) on Roman cloaks. These garments have hitherto been puzzles to most scholars. They were confused with each other and given wrong names. Now we can distinguish the pallium, which is the Greek himation (ch. VI); the paenula with hood, used since the time of Plautus by citizens of all classes (ch. VII); the paludamentum and the sagum for military use, the first for the emperor and generals, the second for the equites (ch. VIII); the heavy, woollen laena, fastened by a brooch; the lighter lacerna and the late birrus for cold and rainy weather (ch. IX).

Chapters X-XII on the special dress of children, of the bride, and of the matron are well written. I disagree, however, with a few points, which might have been still fewer if Miss Wilson had not only quoted in the bibliography, but also used, my book on the history of Greek dress, *Entwicklungsgeschichte der Griechischen Tracht*, 1934. It is not right to compare an early classic, instead of a Hellenistic, peplos (fig. 88) with a Roman peplos of a girl in the group (fig. 87). The Hellenistic peplos is narrow, fastened along the shoulders, so that the arms come out of the side margins, as in Wilson fig. 90 a-c. In the classical peplos they would come out somewhere at the outer part

of a-a, which, however, would have been wider (cf. Bieber, *op. cit.*, pp. 33 f., fig. 6, pls. 17-23 with p. 35, pls. 34, 36, 39, 41). The group (fig. 87) is one of the many examples of the fact which Miss Wilson (p. 146 f.) denies, viz. that Greek drapery is used for portraits of Roman noble ladies (cf. Bieber, *op. cit.*, pp. 37 ff., 43, pls. 49-52). To this group belongs also the relief fig. 96. The woman between her sons is of the type of the "Pudicitia," which had already become stereotyped for matrons on Hellenistic tombstones (Bieber pl. 49, 1-3). Only the face is a portrait. I refuse to believe that the tunic with buttoned sleeves, which the Romans not only in art but also in life have taken over from the Greeks, and of which Miss Wilson gives an excellent reconstruction (fig. 99, pp. 157 ff.) is the Roman stola, the dress of honor conceded matrons for marital fidelity; and she herself confesses (p. 161) that there is no actual proof for it. In my article "Stola" in *Pauly-Wissowa* 2, series IV A, pp. 58 ff., I tried to demonstrate that an upper tunic, worn above the sleeveless or sleeved tunic was the stola. I now moreover believe that the institae, which were sewed, not woven, on the dress, from below (Horace, *Sat.* 1, 2, 29 *instita subsuta*, Ovid, *Art. Am.* 1, 32) are not flounces in the lower part, a mistake first made by Porphyryon in his scholia on Horace, which has passed into all modern commentaries and dictionaries, but for which there is no evidence in art. They are the bands or ribbons sewed in from the inside holding the upper folds of the tunic below the shoulders, so that it hangs down deeper than if the material is drawn on the shoulder and gathered along the upper arm. In Petron. (*Satyr.* 20), a maid takes two institae from her bosom (*protulit de sinu*). Institae are also straps supporting the mattress on a bed (Petron., *Sat.*, 97, 4). For representations of these features see Bieber, *a.O.*, pp. 60 f. and Wilson, fig. 100. Here the sleeves belong to the ordinary tunic; the broad bands from which the upper dress is suspended from the shoulders belong to the stola, which from them hangs down to the ankles (Horace, *Sat.* I, 2, 99: *ad talos stola demissa*). As it was a badge of honor, it must have been the uppermost in order to be well visible. The diagram, fig. 103, does not give the stola, but the ordinary tunic, as illustrated in the original tunic from Egypt, Wilson, fig. 47; cf. Bieber, *op. cit.*, p. 42, pls. 46-47.

Chapter XIII, p. 167 f. brings the interesting discovery that the tunicopallium and the synthe-

sis were a suit of matching garments serving as dinner costumes.

There are few errors in the book. Each reference and each work of art is used for its own period. The main error I found was the tondo from the arch of Constantine, fig. 70, dated in the period of Trajan, while it is now generally accepted as being Hadrianic (cf. Bieber, *RM.* xxvi, 1911, pp. 214 ff.; Bulle, *JdI.* 1919, pp. 144 ff.; Lehmann-Hartleben, *RM.* xxxv, 1920, pp. 143 ff.; Eugenie Strong-Sellers, *Art in Ancient Rome*, 1929, II, p. 101).

MARGARETE BIBER

COLUMBIA UNIVERSITY

VASSAL QUEENS AND SOME CONTEMPORARY WOMEN OF THE ROMAN EMPIRE, by *Grace Harriet Macurdy*. Johns Hopkins Studies in Archaeology, No. 22. Pp. xi+148, pls. 5. Johns Hopkins Press, Baltimore, 1937. \$3.00.

This book is a welcome continuation of Professor Macurdy's earlier volume, "Hellenistic Queens," Baltimore, 1932. No one has ever before brought together the available evidence for all the vassal queens of Rome. Some of the queens discussed—the women of the royal house of Judaea, Boudicca of the Britons and Zenobia of Palmyra—are familiar in history and legend. It is valuable to have combined with them the shadowy figures of queens known only from coins, inscriptions, and occasional literary references. Of greatest interest are the queens of Bosphorus, Thrace, and Pontus in the early imperial period, a time when the client kingdoms still possessed considerable strength. Dynamis of Bosphorus, a granddaughter of the great Mithridates, and Pythodoris of Pontus, a granddaughter of Mark Antony, were true successors of the Hellenistic queens; the former seems to have shared power with her various husbands and the latter, though she had sons who could have succeeded to the throne, actually ruled Pontus in her own right. There was a complicated series of dynastic intermarriages, arranged no doubt by the emperors. Dynamis was married four times; her second husband, Polemo, King of Thrace, later married Pythodoris, and her fourth husband, Aspurgus, seems subsequently to have married a granddaughter of Pythodoris and Polemo. Pythodoris herself, after Polemo's death, married Archelaus of Cappadocia. Her position as ruler of Pontus was not affected by the disgrace and death of Archelaus. Pythodoris and her daughter, Antonia Tryphaena, also wife of a

Thracian king and later regent of Pontus, saw their sons made kings of Greater and Lesser Armenia, Pontus, and Thrace. The prominence of these two women, descendants of Antony's daughter who married Pythodoris of Tralles, gives striking evidence for the return of Antony's house to favor. From the new Augustan consular lists (Mancini, *BullComm.* lxiii, 1935, pp. 35 ff., not available until after this book was published) we know that Antony's name had been restored to the *Fasti* by 3 A.D. One might suggest that the ban on the Antonian name was removed after Livia's son Drusus married Antony's daughter about 16 B.C. Friendly relations with Livia are indicated by the fact that Antonia Tryphaena, who used her great grandfather's name, was a priestess of Livia at Cyzicus. The records of these eastern queens are illuminating for the history of the dynasty at Rome.

The Roman contemporaries discussed are Livia, Julia, and Octavia. There is some incidental comment on the younger Agrippina and Julia Mamaea, the two Roman women who secured positions most nearly analogous to that of the Hellenistic queens. The concluding chapter contains a clear analysis of the titles and positions of the queens. Professor Macurdy's interest in them has not led her to exaggerate their importance. The book has excellent illustrations showing portraits and coins of the queens.

LILY ROSS TAYLOR

BRYN MAWR COLLEGE

NOTES ON ANTIQUE FOLKLORE ON THE BASIS OF PLINY'S NATURAL HISTORY, BK. XXVIII, 22-29, by *X. F. M. G. Wolters*. Pp. 150. Amsterdam, H. J. Paris, 1935. Fl. 2.40.

Dr. Wolters has added another book to the body of literature growing up about Pliny's *Natural History*. He starts by putting the sections which he plans to elucidate into their proper relation to Book XXVIII, discusses briefly Pliny's sources and the attitude of the educated Roman, including Pliny himself, toward magic. He defines magic as the "coercion by means of words or acts brought to bear upon a power without him by a person in possession of certain knowledge who thereby brings about certain results." To exercise this coercion the sorcerer must have power or "orenda" which he strives to abstract from words, motions, dead bodies, animals, etc. Gradually primitive man evolved the idea that "orenda," wherever encountered, was one and

the same power. This is animism or animatism. The third stage recognizes souls which dominate bodies and spirits which may exist without bodies. Survivals of all three stages appear in Pliny.

A text with critical apparatus, but modified to give in readable form what is essential to the discussion, together with a translation, follows the brief introduction.

This is all preliminary to the commentary upon every word that has magical significance, in which the author not only brings together the opinions of others, but does not hesitate to give his own interpretation. Enough folklore persists today to make the commentary rather entertaining reading, even for the uninitiated, but for the information of the student there are abundant references to ancient authors and modern writers. A detailed Table of Contents, a Bibliography, and a full Index convert the volume to a book of ready reference.

There are surprisingly few misprints and typographical errors, considering that both author and printer were dealing with a language foreign to them.

MARION E. BLAKE

AMERICAN ACADEMY IN ROME

ESSAI SUR LA GUERRE PARTHIQUE DE TRAJAN (114-117), by *Julien Guey*. Bibliothèque d'"Istros" II. Pp. 157. Imprimerie Nationale, Bucarest, 1937.

We know deplorably little about the grandiose eastern expedition of Trajan which resulted in giving the Roman Empire its widest extent. The historians who treat of the period are all late or bad or both and while contemporary documents add a ray of light here and there, they seldom contribute more than items of chronology, and too frequently only ambiguous or confusing items. It is much easier to deal with the episode with a non-committal largeness of scope or to debate a single point at a time than to assemble all the sweepings and try to make a consistent picture from the collection. M. Guey has had the courage to do this assembling and his essay would be welcome if it were only for its painstaking array of the sources. But the author does much more than collect; he criticizes and interprets. This means a fresh debate for almost every point established. Nothing could more clearly illustrate the paucity of our sources than the fact that they can be so thoroughly worked through in so slight a volume.

A good deal of time is of necessity spent in the

game of trying to salvage as much as possible of authors like Malalas and Xiphilinus whose testimony cannot be entirely accepted. In general this is well done, though there are times when the author's natural desire to press into service every scrap of evidence leads him past the point where conjecture becomes fancy. Indeed, the only charge that can fairly be brought against him is that he sometimes works so hard over details that larger probabilities suffer in consequence. For example, his account of the Armenian campaign, though based on an exhaustive consideration of the data, has unsatisfactory aspects. It begins plausibly enough in supposing that Trajan spent March of 114 in getting from Antioch to Melitene. At a marching rate of 12 miles a day, his time on the road would have been about 21 days. Guey then adopts a conjecture of Von Gutschmid, reading Arsamosata instead of Samosata in the text of Cassius Dio, and assuming a campaign in southern Armenia. To this campaign he assigns April. Trajan then must have recrossed the Euphrates and proceeded by way of Satala to Elegeia where he received the submission of Parthamasiris with a most unexpected promptness and turned a gesture into a real resignation by annexing Armenia as a Roman province. This, according to Guey, occurred at the end of May. At the same rate of march the journey from Melitene to Elegeia would take about 29 days, provided a direct route could be found to and from Arsamosata. Since the time allowed is two months, that probably is enough for the south Armenian campaign, which was not severe enough to leave any trace.

Dio says that Trajan was acclaimed by the troops at Elegeia, which would be the seventh imperial salutation. Guey, however, introduces the surprising conjecture that Trajan refused the acclamation at the time, to accept it in August at the end of the campaign. To this he is led by the fact that, in the emperor's title, *Imperator VII* never appears without *Optimus* and by his conviction that the title *Optimus* belongs to the end of August, 114. The former consideration, of course, does not amount to proof that *Imperator VII* and *Optimus* are simultaneous, but, in any case, the evidence as to *Optimus* is far from certain. Guey's basic hypothesis is that, once the title *Optimus* became part of the imperial title it must invariably appear on the imperial coinage, though its appearance is most irregular on coins of the civic mints. Now a piece inscribed *Rez Parthus*, showing the submission of Parthamasiris,

is without *Optimus*. Hence the title comes after the affair at Elegeia. But is this certain? One type labelled *Profectio Augusti* has *Optimus*, another has not. Guey supposes that they refer to two different occasions. But what occasion could be referred to after Trajan's departure from Rome in October, 113? Guey suggests none. The fact is, as he himself remarks (p. 60), that *Optimus* appears irregularly before the time of its official adoption; it also is sometimes omitted after that time, and its absence cannot be used as an infallible guide.

Guey cites certain Alexandrian coins (Vogt, *Die Alexandrinischen Münzen*, pl. I, 2, 3), the types of which almost certainly refer to the acquisition of Armenia. Now these were issued in Trajan's seventeenth year, that is, before Aug. 27, 114. He supposes that they celebrated the end of the campaign, and then (p. 62) gives the end of August as the time of the completion of the campaign and the conferring of *Optimus* and *Imperator VII*. But what of the necessary interval for the news to reach Alexandria? The celebration must certainly be moved up at least a month if record of it is to appear on Alexandrian coins. The theory would be much sounder for Guey if one supposed these coins to commemorate the annexation at Elegeia (quite as natural an interpretation), for he points out that *Optimus* is not found on the Alexandrian coins of the beginning of the next year (p. 61, "Le titre n'était donc pas connu en Égypte dans les premiers jours de l'année"). But then *Optimus* and the seventh salutation are not simultaneous with the end of the campaign. In fact the series of coins furnishes nothing more than a *terminus ante quem* for the annexation of Armenia (not the end of the campaign) and the adoption of *Optimus*.

The whole latter part of the campaign is obscure. Relying on the date in August which we cannot accept, Guey supplies a campaign "vers la Mésopotamie" for June and July. But it was apparently a campaign without engagements. Where did it end? The map on page 52 shows the line of march ending at Nisibis, but the capture of Nisibis is associated with the eighth salutation in October or November, 114 (pp. 71 ff.). Where was the army in the meantime?

In discussing the campaign against Ctesiphon, Guey adopts and expands Rostovtzeff's suggestion that there were two armies, one following the Tigris, one the Euphrates. There is evidence that Trajan himself was with each force and, to reconcile it, the author proposes that the emperor shall

accompany one army until it has crossed the Tigris and then leave it to take command of the other. It is highly questionable whether the evidence is worth the hypothetical ride across the desert necessary to save it. This would seem to be a case where probability might properly be given precedence. The route for an army marching into Babylonia is along the Tigris, and the only reason for following the desert road down the Euphrates is because you do not command the Tigris. This, of course, was the reason of Cyrus the Younger and this was the true reason of Julian, as proven by the fact that his army of the Tigris under Procopius could not join him. Now Trajan had taken the trouble to conquer Adiabene and there is no doubt that he did so because he intended his main force to follow the route of Alexander. He certainly had boats on the Euphrates for the easy transport of supplies, and garrisons in the towns at least as far south as Dura, but the testimony to his own presence there amounts to very little. There is Dio's story that he planned to dig a canal between the rivers but was afraid that the Euphrates would leave its bed and flow into the Tigris. Whatever is the source of this tale—not very intelligible as abridged by Xiphilinus—it does not, of course, demand the emperor's presence on the Euphrates end of the proposed canal. Then there is Ammianus Marcellinus' testimony that Trajan built the great canal known as the Naharmalcha. This he certainly did not do; it had been dug centuries before. The report is simply an illustration of the ease with which legendary feats could be attached to the name of a conqueror already ancient in Ammianus' time. The same explanation disposes of the throne of Ozogardana, below Hit, where Ammianus and Zosimus say he sat to review his troops. One can think of no reason for holding a review there except the chance occurrence of the huge rock, which is quite as likely to have created the incident as to have served it. As for the triumphal arch at Dura, if it implies the presence of the sovereign at all, nothing prevents the supposition that Trajan went there in the winter of 115–116, to inspect the advanced frontier of Syria. Until we have something more solid to go on we must stick to the plain dictates of strategy and suppose that Trajan accompanied his main force down the Tigris.

It is impossible to review the many points which this painstaking work has assisted in clearing up. It is essentially an examination of details and,

though one may take issue with conclusions here and there, one must be grateful for M. Guey's patience in putting all the scattered material together.

ALFRED R. BELLINGER

YALE UNIVERSITY

LA COMPOSITION DU SÉNAT ROMAIN DE SEPTIME SÉVÈRE À DIOCLETIEN, by *Pierre Lambrechts*. *Dissertationes Pannonicae*, Ser. I, Fasc. 8. Pp. 130. Budapest, 1937.

In this work M. Lambrechts continues into the third century his valuable study of the composition of the Roman senate. The first part consists of an *album senatorium* for the periods, respectively, from Septimius Severus to Caracalla, from Elagabalus to Severus Alexander, and from Maximian to Diocletian, carefully distinguishing in each period the *certa* and the *incerti*. These lists are thorough, taking full account of available epigraphical and other sources, and especially useful since the second edition of *PIR*. has still much ground to cover. No less valuable are the conclusions drawn in the second portion. Contrary to received opinion, it was under Septimius Severus that the provincials became a majority of the senate, and in that majority the Gauls and Spaniards practically disappeared, while the Orientals, who had been rising in importance during the second century, became the largest group and the Africans increased considerably in numbers. The practical absence of Danubians emphasizes the military character of the rule of the Illyrian emperors. Additions to the patriciate consisted chiefly of Italians who could most easily perform the religious duties of their rank and were advanced quickly in titular honors but were given few positions of administrative importance in the empire. The author notes also the evidence for a steady decline in the attendance at senate meetings as the provincial membership grew, the relaxation of the requirement of residence in Italy, the considerable number of Orientals of senatorial rank who pursued no administrative career, and the tendency to select Orientals in preference to others for responsible posts in the east. He also tests by a consideration of cases the application of the Edict of Gallienus, which denied military posts to senators, and corroborates the earlier results of Keyes. The principle of separating military and civil authority was applied fairly consistently to both senatorial and imperial provinces according to the presence of

armed forces there. In other respects a fusion of the two orders was proceeding apace. Analysis of known examples indicates that the praetorian prefect after Severus Alexander and probably also the prefect of Egypt could be of senatorial rank. In spite of a few slips, such as the failure to add the name of Volusian to No. 1110, and lack of sufficient scepticism regarding the evidence of the *Historia Augusta*, this is a valuable contribution, well founded on a solid prosopographical basis and argued clearly and soundly, superseding the previous work in its field.

T. R. S. BROUGHTON

BRYN MAWR COLLEGE

DER QUELLBEZIRK VON NÎMES, by *Rudolf Naumann*. *Denkmäler antiker Architektur*, Band 4. Pp. vii+61, pls. 47, figs. in text 69. Berlin and Leipzig, Walter de Gruyter & Co., 1936. RM. 54.

This detailed publication of the singular complex of buildings near the spring Neumasus at the periphery of the Roman town of Nîmes has a programmatic value: in fact, it is the first book dealing with one of the important Roman ruins of southern France in a manner corresponding to modern standards of archaeological publication.

The author has fulfilled his task in a very satisfactory way, as far as the description and illustration of the ruins is concerned. His drawings, plans, sections and reconstructions are clear and lively. Moreover, they are, as a study of the ruins with the book at hand has confirmed, so exact that in a number of cases the author has given evidence of facts which he himself does not explain. The illustrations, photographs and documentary material from former publications are well chosen. The description of the ruins is generally exact and precise. Each part is followed by an attempted reconstruction and a discussion of date and destination. These latter parts are less valuable than the merely descriptive sections, since the author has not gone far enough into comparative studies. On the one hand he has not tried to trace the general outlay and character of the buildings in comparison with other Roman structures, and on the other hand his discussion of formal details lacks an equal and exhaustive analysis of all the details concerned and is concentrated on a few points (capitals of the "Temple of Diana," pp. 26-28; columns rising from foliated chalices, pp. 46-53), while other details have not been discussed at all, or in a very superficial way.

The author starts with a discussion of the only well preserved part, the impressive "Temple of Diana," to which he rightly accords half of the book. He states that this building, with the exception of minor changes in the central niche of the main hall, is a unit, which was only later included in the whole complex of the "Quellbezirk" by means of a stoa added on the façade and surrounding the whole area. His reconstructions (pls. 13-17) are very convincing and based on ample evidence. In only a minor detail is the author certainly not right, that is, in denying the existence of an original entrance to the lateral parts on the ground level at the sides of the door of the main hall. The arched gate at the right side is clearly preserved and details which I cannot discuss in this review show that an opening existed there, which was closed only when the stoa was built. That the basement here was originally accessible is evident too from a square niche in the north wall of the north gallery and from the fact that an original passage at the end of this wall under the upper door had been closed only in the later period (pl. 9). A corresponding arch may have existed (beneath an arch of discharge) at the other side, where everything is now restored from a point where the gate should begin. The reconstruction (pl. 15 above), thus should add two lower gates at the sides of the main entrance. This reconstruction shows the "temple" as a central building between two flanking structures. They contained only basements up to half their height and, above these, rooms which opened with porticoes on the façade. But the author could have gone still farther, since it is evident from his own description that the ramps leading upward to the portico-storey of the lateral wings turned backward at the façade and led (over the basement galleries s, s', pls. 3, 4, 10) by means of a second flight to a higher part of the building situated on the hill behind the "temple." Large substruction-walls supporting this higher central structure are indeed preserved there. This restoration, which the author has failed to discuss, but which seems clear to anybody who has studied analogous Roman ruins, reveals the "temple" to be only the lower central part of a larger unit, in which extensive upper buildings communicated with it and with its lateral annexes by a system of ramps. In view of these facts, the interpretation of the building seems clear: it belongs to the type of Villa- and Palace-structures, which are laid out on a slope and finds its anal-

ogies in the same age of Hadrian, to which the author rightly ascribes it, in other buildings (*Opuscula arch.* i, 1935, pp. 196 ff.). The character of the "temple" is in harmony with this general layout. That it is a Nymphaeum, or, better, one of these palace halls provided with mysteriously rising fountains in the interior, seems evident from the type of the hall. The author has failed to trace this type, which has such a well preserved forerunner as the "Nymphaeum" in the "Villa of Cicero" at Formiae and of which he would have been able to find other examples with the help of my *Baugeschichtliche Untersuchungen* (pp. 221 ff.). The author categorically denies that any evidence exists for fountains in the interior. It seems impossible, however, to explain the open semicircular shafts behind the rear niches in any other way. He admits the existence of a channel in the façade at the left side of the main door. This channel (pl. 5) is certainly original, because its ceiling was restored at the left side, when the stoa was built. A corresponding channel (visible on pl. 5) existed on the other side. The left one has its outer arch on a higher level than the interior pavement. Thus it is clear that they are not sewers, but aqueducts leading into the interior, and probably they led down on the façade from upper channels through the vertical openings in its upper part (pl. 5, p. 3), a provision to secure more pressure for the fountains in the interior.

This palace, later included in the precinct which contained religious buildings, partly dedicated to the imperial cult, can hardly have been of a merely private character. It must have been an administrative "praetorium" or a local property of the emperors.

In the second part of the volume the author briefly discusses the other features of the precinct, which today, after the destruction wrought in building parks in the eighteenth and nineteenth centuries, are only recognizable in parts. The spring, an old Celtic place of worship of Neumusus, provided with a square temple (probably of the well known Gaulish peripteros type) was later united with a large Nymphaeum, a rectangular porticus with fountain niches, a type for which the author has overlooked the analogy of Lower Peirene in Corinth. In the center of the porticus was erected a large platform, which the author convincingly explains as an altar similar to the Ara Lugdunensis. He dates this whole complex, on the basis of the foliated columns which decorated the four corners of the platform,

in the second quarter of the first century A.D., although his own comparisons point rather to a Flavian date. About 200 A.D., finally, following the clear results of the author's analysis (pp. 53-58), a Corinthian hexastyle temple with characteristic baroque details was built opposite the spring and, at the same time, the Hadrianic palace was included in the ensemble by means of porticoes which led to a small theater in one corner of the precinct.

The book, in addition to the other deficiencies mentioned, is unfortunately written in a very awkward German style, which will make its reading difficult to foreign and unpleasant to German readers, but, with all that, we are grateful to have here a first, and it may be repeated, as far as the description and illustration go, a very good publication of important architectural relics of Roman Gaul.

KARL LEHMANN-HARTLEBEN

NEW YORK UNIVERSITY

DER TEMPELBEZIRK IN ALTBACHTALE ZU TRIER, Heft 1. Planausschnitt, Ritonatempel und Umgebung, by *Erich Gose, Ludwig Hussong, Wilhelm Jovy* and *Siegfried Loeschke*. Pp. viii + 140, plates 32. Reichverlag, Berlin, 1938. RM. 18.50.

Far too little attention has been given by the archaeological world in general to the extensive Roman remains which are coming to light at Trier. It should, therefore, welcome the scholarly volume recently published by the Archäologisches Institut des Deutschen Reiches, describing the temple precinct in Altbachtal near Trier. Not only is every temple and chapel described in each of its many phases, but the levels are analyzed with due attention to the coins, potsherds, and minor finds and they are all carefully dated. In addition to a few prehistoric graves and some scanty traces of a pre-Roman settlement employing frame buildings of wood, sufficient evidence has been amassed to give a clear picture of the site from the beginning of the Christian era until well into the Middle Ages. A detailed catalogue of the minor objects follows these architectural considerations. A separate chapter is devoted to ceramics. The concluding chapter discusses in interesting fashion the chronology, the technique of building, the form of the edifices and the cults to which they were dedicated. The names Ritona, goddess of fortune, Epona, mother-goddess, Apollo-Granus, Vorio, and Leucetius have an unfamiliar

ring; Mercury seems to be keeping strange company.

The five figures in the text aid the imagination in the process of reconstruction: the architectural plans (pls. 1-9, 31) are unusually clear; the photographs (pls. 9-26) are excellent; the line-drawings of significant potsherds (pls. 26-30) will appeal to the specialist. The authors have taken advantage of the fact that the plates are unbound to inform the reader at the beginning of each section which ones to spread out before him for a complete understanding of the text.

The paper is excellent and the whole format leaves little, if anything, to be desired. The book is designed throughout for the archaeologist rather than for the general reader.

° MARION E. BLAKE

BRADFORD, VERMONT

OPGRAVENING OP HET DOMPLEIN TE UTRECHT III: DE OPGRAVENINGEN IN JUNI EN JULI 1934, by *C. W. Vollgraff* and *G. Van Hoorn*. Pp. 55, figs. 34, pls. 11, all numbered consecutively to Fasc. I-II of the same title. Haarlem, Willink & Zoon, 1936. Fl. 4.50.

The present fascicle deals with an extension (ca. 23 m. x 6.50 m.) of an area previously excavated in the Utrecht cathedral square and published in 1934 (reviewed *AJA.* xxxviii, p. 619). The architectural and minor finds, falling into three principal chronological parts, obviously extend and clarify the material and conclusions already adduced. First is discussed the new evidence for the St. Salvatorskerk. Vollgraff attributes the preserved foundations to a tenth-century rebuilding of an eighth-century church destroyed by the Normans in 857. That the site of this tenth-century church had previously been a burial ground was shown by the finding of several skeletons and especially of a large, stone sarcophagus attributable to the eighth century by its linear style of decoration. The site of the original eighth-century church is still to seek. Next is discussed the later Roman camp, including a stone wall built between 150 and 155 A.D., contemporarily with the stone camp at Xanten, and apparently abandoned about a century later. Stamps of the *cohors II Hispanorum peditata pia fidelis* belong to this period. A suggestion previously advanced (p. 47) that after the revolt of the Batavi the camp site lay unbuild for about thirty years is now corrected to a much prompter reoccupation (p. 96). As for the older camp, burnt

on May 1, 69 A.D., some additional traces of barrack buildings were found, and the wood-and-plaster fortification wall with the foundations of a tower. The precise date of the foundation of the camp is still uncertain (after 47 and probably after 50 A.D.). Fifteen pages and numerous illustrations are devoted to the artifacts found, followed by supplementary summaries of the evidence of animals, insects, fish and plants. The text ends with a republication of the tenth-century *epitaphium Ricfridi* of which the original once stood in the St. Salvatorskerk, for comparison with the *epitaphium Ratgeri* found in the excavations of 1933.

The small finds include a surgeon's bronze forceps inscribed LVCIVSF, and other objects, but special treatment is given by J. C. de Groot to the terra sigillata, of which 70 decorated fragments are well illustrated, and 52 signatures on the plain fragments are transcribed. No account is taken of unsigned plain fragments. The ware is more plentiful than in the previous campaigns, and adds its share to the increasing quantities from datable sites. Parallels to the decoration are generously supplied, but the reluctance to cross the Channel in search of them, as noted in the previous review, has not been overcome. Attributions are generally sound, but I would strongly question calling fig. 66, 34 (Form 29, with a simple winding scroll and godroons) East Gaulish \pm 100 A.D. The parallels adduced do not justify it (rather the contrary), and even the description of the color, etc. can be reconciled with South Gaulish Claudian work by comparing Ritterling, *Hofheim*, pp. 203 ff.

As before, the plans, drawings and photographs are unusually good. The plan of the work makes an index unnecessary.

HOWARD COMFORT

HAVERFORD COLLEGE

HET GRAFVELD ONDER HEES BIJ NIJMEGEN (Allard Pierson Stichting, *Archaeologisch-Historische Bijdragen* IV), by H. Brunsting. Pp. 216, pls. 12. Amsterdam, 1937. Fl. 4.90.

The large Roman cemetery of Hees, adjoining Nymwegen and containing thousands of cinerary burials, has been known since 1867, but only within the present century has it been somewhat systematically plundered for antiquities which, after more or less irresponsible treatment, have passed into the Kam Museum, the Gemeente Museum at Nymwegen and the Rijksmuseum van Oudheden at Leiden, or have been dissipated

into private hands. Dr. Brunsting brings these museum collections into a single treatment in so far as possible, and adds an inventory of forty-two closed groups from the same area. These are mostly tombs which were brought to light under more favorable scientific auspices, and several of them are now in the Allard Pierson Museum, Amsterdam. Chapter I describes the terrain and the excavations; ch. II deals with the ceramics; ch. III deals with the remaining finds, including the closed groups; ch. IV (in German) is a summary and conclusion. In ch. II the sigillata naturally takes first place, with very few of Form 29, not many of Form 37, and only four of Déch. 67. The numerous others are, as might be expected in a cemetery, plain. Fifteen pages are required for a summary of the potters' stamps. No sigillata is illustrated in any way, but the other ceramic categories are given in section and elevation on pls. 3-7, and form a welcome compilation. In the summary, two principal views are put forward: that the period of the necropolis is A.D. 70-ca. 240, and that the Batavi may have been predominantly Celtic rather than Germanic (*pace* Tacitus). Both conclusions are disputed by H. v. Petrikovits in his review in *Bonn. Jahrb.* cxli, pp. 363 ff.—the latter with especial vigor.

The principal value of the work lies in its treatment of the second-rate pottery of the area and period, which is characterized by the usual Dutch competence and thoroughness. One might have wished for more generous illustration of some of the individual items, for instance the fine "hunt cup" from the seventh closed group.

HOWARD COMFORT

HAVERFORD COLLEGE

THE RICHBOROUGH HOARD OF "RADIATES," 1931, by Harold Mattingly and W. P. D. Stebbing. *NNM.* 80. Pp. 118, pls. xv. New York, American Numismatic Society, 1938. \$2.50.

This hoard of 875 bronze coins, found in 1931 in the excavation of the Roman fort at Richborough, consists chiefly of small imitations of Roman issues with the Emperor's head radiate on the obverse. They are here classified according to the reverse types, described with scrupulous care and illustrated by a dozen plates. The catalogue is all that could be desired; there are several inaccuracies in regard to the illustrations, but none likely to give serious trouble, except perhaps the reference, on p. 115, to pl. V, 1, where apparently

pl. X, 10 is meant. The plate of cuts on p. 109, between Appendix A and B, has nothing to do with either of them, and would be more sensibly placed with the other plates.

The presence of two coins of Theodosius and one of Arcadius establishes a *terminus post quem* of 380-390 A.D. for the burial of the hoard. But the inclusion of imitations of late 4th-century coins as well argues for a still later date, since it is known that the authentic Theodosian coinage circulated for years after the Roman withdrawal from England. Moreover, another group, which imitates no known type, seems to be the product of moneyers whose ideas were original, however inept may have been their technique. While not denying that the imitation of radiates may have begun early in the 4th century, the authors conclude that the latest coins in the hoard are the product of the followers of Hengist and Horsa summoned to England in 449. Appendix A lists a number of similar pieces in the British Museum. In Appendix B, Derek Allen discusses the relation between coins in the Richborough Hoard and certain of the Anglo-Saxon thrymsas and sceattas and advances the theory that the former, which Mattingly and Stebbing date from 449, may belong to the age of Augustin, ca. 596-613.

In his recent volume "Coinage and Currency in Roman Britain" C. H. V. Sutherland concludes that imitations of radiate types "continued to circulate—until the Anglo-Saxon coinage substituted a silver for a copper standard." He had had access to the Richborough Hoard, but, as he does not refer to the authors' conclusions, it is not apparent whether his own more conservative view is caused by not having considered theirs or by differing from them. Their case is certainly a strong one and should introduce a new study of the earliest Saxon coinage, which may lead to a decision as to whether their date or Allen's is the likelier.

The archaeological evidence, as presented, is somewhat confusing. The coins were found at a level "which has been dated to the same age as the walls. These were probably erected within the years A.D. 275 and 296." The associated pottery was of the late third and early fourth centuries. On the other hand, a hoard of "minimisums," still unpublished, was found "in the uppermost layer." One would think, then, that they should be a later burial than the radiates, but Allen (p. 117) obviously regards them as earlier. Either there is something wrong with the dating of the

levels, or the radiates are an intrusion, but the authors do not suggest which.

ALFRED R. BELLINGER

YALE UNIVERSITY

QUANTULACUMQUE, STUDIES PRESENTED TO KIRSOPP LAKE, by Pupils, Colleagues and Friends. Edited by Robert P. Casey, Silva Lake, and Agnes K. Lake. Pp. viii + 367, numerous plates (not numbered). London, Christophers, 1937. £1.

This finely printed and beautifully illustrated volume is a worthy follower in the distinguished tradition of *Festschriften*, publications which may be the bane of students who must remember their contents, but which are probably nevertheless the most graceful form of tribute to distinguished men of scholarship. The problem of editorship with such volumes is difficult. The appropriate contributors are numerous and the space available ordinarily strictly limited. The result is often a kaleidoscope of brief articles and notes upon a bewildering array of topics. It is greatly to the credit of Mrs. Lake and her associates that the present volume, notwithstanding its modest title, shows a high degree of homogeneity and substantial content, the thirty-four contributors being allowed an average of almost ten pages each and the contributions bearing for the most part directly on the field of Professor Lake's special interest. In this review in an archaeological journal, it is possible merely to list them briefly.

The greatest number of articles deal with the textual tradition of the New Testament. Hubert Pernot (Sorbonne; "Que Vaut Notre Texte des Évangiles?") argues that the editions since Erasmus depend too much on the major MSS., appeals for a study of the language of the individual evangelists and the problem of contamination between the individual gospels (and Acts), and urges that all the MSS. be made photographically available for study. Henry A. Sanders (Michigan; "A Third Century Papyrus of Matthew and Acts") and Carl H. Kraeling (Yale; P. 50. "Two Selections from Acts") publish new papyrus texts. Sir Frederic G. Kenyon ("Some Notes on the Chester Beatty Gospels and Acts") suggests that these may have a Caesarean cast. B. H. Streater (Oxford; "Codices 157, 1071, and the Caesarean Text") discusses a number of MSS. of this type. Ernest Cadman Colwell (Chicago; "A Misdated New Testament Manuscript: Athos, Laura B. 26") and William H. P.

Hatch (Episcopal Theological School; "A Redating of Two Important Uncial Manuscripts of the Gospels—*Codex Zacynthius* and *Codex Cypricus*") discuss datings, deciding in the first case for the thirteenth rather than the eleventh century, and in the second for the sixth century and ca. A.D. 1000 respectively. E. A. Lowe (Oxford and Princeton; "The *Codex Cavensis*") connects this magnificent Spanish MS. (illustrated by three plates) with the Benedictine Mauritius Bordinho and argues that it came to Italy in the twelfth century. A. Souter (Aberdeen; "Portions of an Old-Latin Text of Saint Matthew's Gospel") discusses the quotations of the gospel in Jerome's commentary; while the commented text is the Vulgate, the additional quotations in two MSS. are from an Old Latin text. Robert P. Blake (Harvard; "Notes on the Text of the Georgian and Armenian Gospels") shows on the basis of mistranslations of the Greek text that the Georgian was a translation of the Armenian.

New Testament studies are likewise well represented. Henry J. Cadbury (Harvard; "Rebuttal, A Submerged Motive in the Gospels") finds numerous instances where the Evangelists seem to be answering hostile criticism or trying to harmonize inconsistent traditions. Robert P. Casey (Brown; "Some Remarks on Formgeschichtliche Methode") points to difficulties in the way of recovering the tradition of the Oral Period with any certainty. Morton S. Enslin (Crozer Theological Seminary; "The Date of Peter's Confession") regards Peter as the primary authority for the Resurrection in the early Church, and would interpret the Transfiguration and the Confession at Caesarea Philippi as doublets of the Resurrection Appearance. Norman Huffman ("The Sources of Mark") distinguishes on a number of grounds Mark's version of events at Jerusalem and of Jesus' earlier ministry; the former reflects the observation of an eye-witness, Mark himself; the latter is derived from various sources, not only (if at all) Peter. Charles C. Torrey (Yale; "*Christós*") argues that this is always an epithet, never a proper name, in the Gospels. T. R. S. Broughton (Bryn Mawr; "Three Notes on Saint Paul's Journeys in Asia Minor") examines the most natural routes for Paul to have taken from Perge to Antioch-toward-Pisidia and from Cotium to Alexandria Troas, and supports Lake's objection to Ramsay's "Regio Phrygia Gallatica." Suzanne Halstead (Radcliffe; "Paul in the Agora") lists the buildings which Paul

would have seen in the light of the Agora excavations.

Four articles deal with Judaism. Robert H. Pfeiffer (Harvard; "Midrash in the Books of *Samuel*") lists numerous additions (ca. 400–200 B.C.) to the original work of the time of Solomon; these add chiefly fantastic details but sometimes concern dogma, and their object is to exalt Samuel and David and to disparage Saul and Eli. George Dahl (Yale; "Crisis in Ezekiel Research") supports Torrey's thesis that the work is a pseudepigraph of ca. 225 B.C. B. D. Erdmans (Leiden; "Reflections on a Synagogue Inscription") discusses the universalist hope of *Isaiah* 66 (inscribed on the Leiden Synagogue) and its non-fulfillment. Erwin R. Goodenough (Yale; "Literal Mystery in Hellenistic Judaism") answers critics of his *By Light, Light*; the mystery of Philo was "literal," its doctrine being the philosophy of the Greeks (the idea of philosophy as a mystery is as old as Heraclitus), its sacraments the rites of Judaism.

Pagan religion and religious history claim likewise four articles. Agnes K. Lake (Bryn Mawr; "The *Supplicatio* and *Graecus Ritus*") shows on the basis of archaeological evidence that the *pulvinaria* were raised platforms in temples, whence the word might be used as an equivalent of "temple," and that the earlier *supplicationes* (in Livy) were usually not ordered by the *decemviri* nor related to the *Graecus Ritus*; the association was secondary, and may have been due in part to Q. Fabius Pictor, who introduced the practice of wearing wreaths. Lily Ross Taylor (Bryn Mawr; "A *Sellisternium* on the Parthenon Frieze?") points out that the *sellisternium*, like the *lectisternium*, was a Greek institution, and would see this pictured on the east frieze of the Parthenon, where two maidens are bringing chairs to the priestess of Athena Polias, and the *archon basileus*, assisted by a boy, is folding a cloth to lay over one of them. Campbell Bonner (Michigan; "The Sibyl and Bottle Imps") discusses the motive of the imprisoned imp as an element in the Sibyl story. Joachim Wach (Brown; "Der Begriff des Klassischen in der Religionswissenschaft") appeals for the acceptance and use of "classical" forms and personalities in religious education to avoid the disadvantages of an undistinguishing accumulation of religious phenomena, and as a guiding principle in the study of religious history.

Studies dealing with later periods may be described together. Hans-Georg Opitz (Berlin; "Dionys von Alexandrien und die Libyer") argues

that the letter of Dionysius to the Libyans (*Cod. Vat. Lat. 5750*, p. 275) was later used as authority by the Originists and the Arians; in a general discussion of the episode he finds evidence for an earlier date of Pope Dionysius (ca. 259-60 A.D.) than that hitherto assumed (Jülicher: Aug. 22, 260). J. de Zwaan (Leiden; "The Edessene Origin of the Odes of Solomon"), starting with the reference to floods (i.e. of the Daisan) threatening the church, concludes that the odes came from the circle of the Sons and Daughters of the Covenant ca. 200 A.D., after the controversy between the National Church and the Catholic Palutians. In the longest article in the volume, Carsten Hoëg and Günther Zuntz (Copenhagen; "Remarks on the Prophetologion") discuss their forthcoming edition of this work; they conclude that the text was prepared in Constantinople in the eighth century on the basis of the Lucianic text, divergences being either material familiar in an earlier form or later contamination with the LXX. Hans Lietzmann (Berlin; "Ein Blatt aus einer antiken Weltchronik") publishes an illustrated parchment with a text based upon the Consul. Ital. and, where this is lacking, upon the Consul. Constant. Silva Lake (Brown; "A Note on Greek Ciphers") describes a numerical "Grottaferrata cipher." L. Hugues Vincent (Jerusalem; "Aux Origines de l'Architecture Chrétienne") shows by the basilica of Emmaüs (early third century) that Christian architecture developed early, and that the Constantinian basilicas, the Eleona, the Anastasis, and the Nativity, show a long familiarity with the technique of construction. John Milton Potter (Harvard; "A Political Treatise of the Early French Renaissance") describes the *Régime d'un Prince* of Jean de Marre, interesting to a classicist as a remote descendant of the treatises *peri basileias*. Theodore Silverstein (Harvard; "The Tertia Philosophia of Guillaume de Conches and the Authorship of the Moraliu Dogma Philosophorum") shows inconsistencies in point of view between the two works, but does not commit himself as to the authorship of the latter. And finally, William Thomson (Harvard; "The Early Muslim Sects") traces Jewish and Christian influence on the rise and development of Muslim heresies.

This summary review of the contents will suffice to show the interest and importance of the volume. One misses only that useful feature of *Festschriften*, the bibliography of the scholar honored. The personal details of the *Biographical Note* of Gerard K. Lake would have been well

supplemented by Professor Lake's distinguished literary biography.

C. BRADFORD WELLES

YALE UNIVERSITY

ICONOGRAPHY OF SOUTHERN INDIA, by G. Jouveau-Dubreuil. Translated from the French by A. C. Martin. Pp. 140, 78 half-tone plates. Paris, Librairie orientale Paul Geuthner, 1937. Fr. 120.

This book is frankly a disappointment. In 1914 Professor Jouveau-Dubreuil in his "Archéologie du Sud de l'Inde" (*Annales du Musée Guimet*, 26, 27) devoted the second part to Hindu *Iconographie*. At that time it was a good work, but still not a complete study. Since then other works have been published, contributing to the knowledge of South Indian Hindu iconography, notably the four volumes of T. A. Gopinath Rao's *Elements of Hindu Iconography*, 1914, 1916, and F. H. Gravely and T. N. Ramachandran's *Catalogue of the South Indian Metal Images in the Madras Government Museum*, 1932. Yet the book noticed here is a direct translation of Jouveau-Dubreuil's work of twenty-three years earlier, without revision of the text or addition of new illustrations. In ignoring work done between 1914 and 1937, the author and publisher have missed an opportunity to provide a much needed up-to-date treatment of South Indian iconography, which is indescribably extensive and puzzling. The one advantage of the English translation over the French original is that it groups the illustrations more conveniently and on the whole prints them better.

W. NORMAN BROWN

UNIVERSITY OF PENNSYLVANIA

INDIAN TEMPLES. 136 Photographs Chosen and Annotated by Odette Bruhl, with a Preface by Sylvain Lévi. New York, Oxford University Press, 1938. \$3.00.

These photographs of temples, ornamental sculpture, natural scenery, and Indian people are chosen eclectically to give an impression of religious life in India from the time of the earliest surviving material remains to the present. They are not meant to offer a systematic historical survey of Indian temple architecture. Matters of taste being involved, rather than of science, it may be said that the selection is good. Most of the illustrations are of familiar material, but those of Nepal are in some cases unusual. The notes accompanying the photographs are almost unduly

brief. In a preface of four large, closely printed pages the late professor Sylvain Lévi gives an eloquent and competent characterization of India's religious history.

W. NORMAN BROWN

UNIVERSITY OF PENNSYLVANIA

SCHWEDEN UND DAS KAROLINGISCHE REICH. STUDIEN ZU DEN HANDELSVERBINDUNGEN des 9. JAHRHUNDERTS, by *Holger Arbman*. Pp. 271, pls. 74, figs. in text 42. Stockholm. Wahlstrom and Widstrand, 1937.

American archaeology has in the past been inclined to regard the early cultural history of our European ancestors in a somewhat disconnected fashion. We have concerned ourselves with the Old Stone Age because it was the beginning, but have looked upon subsequent prehistoric periods as a vacuum. We have again applied ourselves to the study of Greek and Roman remains because they are of artistic merit, but have neglected the succeeding centuries, before the full development of the Middle Ages, as an artless era of scant interest. We have thus bereft ourselves of any complete picture of early Europe such as Germans know under the name of *Vor- und Frühgeschichte*.

The importance of such studies becomes increasingly apparent, however, in the age between the collapse of the Western Empire and the rise of the Christian Kingdoms of the Middle Ages. Here the evidence of the spade, guided by and at the same time enormously supplementing the scanty archives, has rendered this period far from dark. The excavations of Dr. Holwerda at Dorestad in Holland and of Dr. Jankuhn at Hedeby in Schleswig have shown far more plainly than historical records the importance of these great commercial towns. To Dr. Arbman's forthcoming publication of their Swedish counterpart, Birka, the present volume is a prologue.

In the North in the ninth century the art of the Church had not yet interrupted the ancient continuum of pagan culture. Hence what Dr. Arbman has to say concerns the purely archaeological material that for Sweden at this time largely takes the place of written record. Dr. Arbman has devoted the first half of his book to a study of the Carolingian glass and pottery imported by the heathen Swedes, and his work is now regarded as standard on these subjects not only for his own country but for the Continent generally. Indeed the large quantity of such material from dated pagan graves in Sweden supplies a wealth of in-

formation unobtainable in the lands of the Frankish Empire, where the Church opposed the burial of grave-goods with the dead. This is especially true of Carolingian glass, of which by far the greater part has been found in Swedish graves. Of especial interest is Dr. Arbman's identification of a German factory for making similar glass at Cordel near Trier.

In his handling of the problems of foreign animal style in Sweden the author is perhaps less successful, through lack of familiarity with contemporary English art, but his careful descriptions of the material are most useful. The Gipping Beast Style, for instance, seems more intelligible if regarded as a facet of the barbaric art of the lands bordering the North Sea rather than as a product of the Franks. If Dr. Arbman has underestimated English influence in some places, he has overestimated it in others, for the Lindau Book-cover in the Morgan Library, which he considers English, is now believed to be a Continental work. He concludes with valuable chapters on plant and filigree ornament, weapons, small objects, coins and modes of burial.

H. O'NEILL HENCKEN

PEABODY MUSEUM
CAMBRIDGE, MASS.

ANCIENT CAVES OF THE GREAT SALT LAKE REGION, by *Julian H. Steward*. Pp. 131, pls. 9, figs. 48, map. Bureau of American Ethnology, Bulletin 116, Washington, D. C., 1937. \$.25.

The report describes the results of the first serious archaeological investigations in an exceedingly important area. This region lies between the Northern Periphery of the Pueblo culture, the Plains, and the Northern Plateaus, where we may expect on the one hand the survivals of ancient hunting and food-gathering cultures, and on the other the mingling of elements from the more advanced areas that surround it.

The fact that the caves examined are associated with the various lake terraces of Great Salt Lake (Lake Bonneville) offer the possibility of correlating early cultural remains with geologically dated periods. Unfortunately, only the uppermost layers of the caves yielded much material, though it is hoped that future research will discover equally rich deposits in the lower layers. The recent geological history of the region is expressed in the following lake terraces: Lake Bonneville level (maximum Wisconsin glaciation) 40,000-25,000 years ago; Provo terrace 25,000-20,000 years ago;

Stansbury terrace 10,000-? years ago; Great Salt Lake ?-the present time.

The three main caves investigated yielded the following cultural sequence. (I add my own interpretation of types to the author's list): (1) Black Rock Cave, earliest culture: disintegrated human burials, chipped oval scraper, side-scraper, knife with notched base, drill point, leaf-shaped blade, small side-notched arrow point, bone awl, hand-game stick, stiletto, clam shell, red paint, steatite arrow straightener (?) — 15,000 or 10,000 years old. (2a) Black Rock Culture: lamellar flake knife, leaf-shaped blade, irregular flake scraper, tanged arrow point, "corner-notched" (tanged and barbed) arrow and dart points, bone awl, bird-bone tube bead, bone flaking tool, shells, open twined matting—Age ? (2b) Cave No. 2, earliest culture: chipped leaf-shaped blade (cf. Signal Butte I and Pinto Basin), shallowly side-notched blade (cf. Basket-Maker dart point), end-scraper, calcite uolo-shaped scraper (?), chipped slate (?), bone awl, intrusive unidentified potsherd, bird-bone tube bead, shell—5,000 or 1,000 B.C., possibly contemporaneous with the Black Rock Culture. (3) Cave No. 2, next to earliest culture: chipped leaf-shaped blade, broad "corner-notched" blade, shallowly side-notched blade, tanged blade with swallow-tail butt (cf. lowest level at Lovelock Cave and Pinto Basin), end-scraper, plain and retouched flakes, triangular or leaf-shaped chipped slate blades (cf. Kachemak Bay II, Alaska), muller, bone awl, cut animal articulation, shell—Age ? (4) Cave No. 2, next to youngest culture: broad "corner-notched" (tanged and barbed) blade, end-scraper, flake—Age ? The lower, unexplored levels of Cave No. 1 may be contemporaneous with these older cultures, since the cave could have been occupied 7,000 or 8,000 years ago. (5) Promontory Culture (upper levels of Black Rock Cave, Cave No. 1 and No. 2): chipped leaf-shaped blade, broad "corner-notched" (tanged and barbed) blade (cf. Black Rock type, but larger), tanged and shouldered blades, slightly side-notched blade (cf. Great Basin, Utah Pueblo, the Southwest, recent Signal Butte), triangular blade with concave base, crude triangular knife blade (?), end-scraper, narrow side- and base-notched arrow blade, plain and retouched flakes, muller, metate (?), hammerstone, uolo-shaped chipped slate scraper (cf. Kachemak Bay II), chipped drill point, slate slab with incised designs (cf. Prince William Sound Eskimo, Alaska), red

paint, asphalt, bone awl, bone disk with hole, bird-bone bead, stone pot polisher, shell ring, bone chisel, cut animal bone articulation, cane arrows with three half-feathers, hardwood foreshafts, and red paint decorations, arrowshaft smoothers (cf. Signal Butte I, Great Basin, Pueblo), tubular stone pipe, sinew-backed bow, fire drill, digging stick, bark ring pot-rest (Pueblo), wooden tube, peg for snare, cane gambling piece (cf. Great Basin and Plains), netted hoop and feathered dart for game, bone piece for game (cf. Great Basin, Plains, California), tooth piece for game (cf. Puget Sound), bone scraper, scapula sap (?), scraper (cf. Northern Plateau), bone flaking tool, two-handed bone scraper (?), twined or sewed matting (cf. later layers in Lovelock Cave), fur and feather cords for blankets (?) (cf. Basket-Maker, Pueblo, upper levels in Lovelock Cave), abalone shell pendants, deer-hoof rattle (?), buffalo-hair paint-brush (?), pottery with thickened rim and "finger-nail," incised, and punched decorations (cf. Northern Plains), ollas shaped like Navajo water drums, a few Puebloan trade sherds, skin drum top (?), mitten with separate thumb, skin bag, fringed legging (?), dehaired skin, sandal-moccasin (rare), Tlingit-Tahltan-Tsimshian 4-piece moccasin (common), wooden knife handle for end-blade and side-blade (cf. Lovelock Cave, and Southern California)—Post-Basket-Maker and post-Utah-Puebloan, i.e., 1,000 to 100 years ago. The Promontory Culture is somewhat different from the modern Shoshoni, which curiously enough is hardly represented at all on archaeological sites. The Promontory Culture seems to be a northern buffalo-hunting culture which existed long enough in the region to have acquired certain southern (especially Southwestern) traits. It was probably carried by the Athabaskan nomads who drove the Pueblo pit-house dwellers out of the Northern Periphery. The pictographs of the region are Basket-Maker-Pueblo or unidentified. The petroglyphs were made by the historic Shoshoni.

Archaeological research in this area is thus beginning to reveal two important chapters in the prehistory of North America. First we find that the earliest inhabitants, probably contemporary with the Folsom mammoth and bison hunters of the High Plains, were unmistakably Indian in culture, and that their culture can be linked to the present by a series of successive stages. Second we see, not the impact of the Athabaskan raiders on the peaceful Pueblo culture, a story already familiar, but no less fundamental of less dramatic

impression made by the sedentary southern culture on the northern hunters.

The author's careful presentation of this valuable material is marred by the fact that most of the illustrations are line drawings of uneven merit, and because a good deal of the text has been printed in the very fine type so popular with the Government Printing Office and so unpopular with readers.

FREDERICA DE LAGUNA

BRYN MAWR COLLEGE

HISTORICAL AND ETHNOGRAPHICAL MATERIAL ON THE JIVARO INDIANS, by *M. W. Stirling*. Pp. 148, pls. 37, text figs. 6, map. Bureau of American Ethnology, Bulletin 117, Washington, D. C., 1938. \$.35.

The author too modestly explains in the Foreword: "The chief value of the present work is the assembling and presentation for the first time in English of most of the known source material. This, together with the illustrations, constitutes the principal justification for the present volume." The material is well arranged, but the author's work has been seriously marred by the invariable custom of the Government Printing Office of putting all quotations, however important, in exceedingly minute type, a custom to which this reviewer strongly objects.

The book makes no pretense of being a complete description of Jivaro ethnography. Certain

important topics have been considered in the treatment of which, historical material has been supplemented by the author's field observations: supernatural beliefs (presented somewhat briefly), war and head hunting (in considerable detail), social and political organization, economic life, etc. (in less detail). "These practices instead of being peculiar to the Jivaros are traits which were formerly typical of a wide area in the northern Andes. The method of approach has been primarily historical; this chronological study bringing out several interesting points, such as population changes and the apparent post-Columbian introduction of the blowgun. The high civilizations of the Andes at the beginning of the sixteenth century differed from the rather primitive culture of the Jivaros, mainly in superficial aspects [!]. A study of the Jivaros today and of the ancient tribes of the western Andes, as viewed in historical perspective, seems to indicate that they merely represent different degrees of development from a common cultural background." Archaeological remains show that the material culture of the prehistoric Jivaros "resembled that of the ancient cultures of the highlands much more closely than do present-day survivals." For this reason alone, the report should interest archaeologists as well as ethnologists.

FREDERICA DE LAGUNA

BRYN MAWR COLLEGE

ABBREVIATIONS

The following abbreviations of the titles of publications will be used in the JOURNAL, other titles being uniformly abbreviated:

- AA*: Archäologischer Anzeiger.
- AASOR*: Annual of the American Schools of Oriental Research.
- AASPR*: Annual of the American School of Prehistoric Research.
- ABA*: Abhandlungen der Preussischen Akademie der Wissenschaften, Berlin.
- ActaA*: Acta Archaeologica.
- AdI*: Annali dell' Istituto.
- AEM*: Archäologisch-epigraphische Mitteilung.
- AJ*: Antiquaries' Journal.
- AJA*: American Journal of Archaeology.
- AJN*: American Journal of Numismatics.
- AJP*: American Journal of Philology.
- AJSL*: American Journal of Semitic Languages.
- AM*: Athenische Mitteilungen.
- Annuario*: Annuario della R. Scuola Archeologica di Atene.
- AntDenk*: Antike Denkmäler.
- AOF*: Archiv für Orientforschung.
- ARW*: Archiv für Religionswissenschaft.
- AV*: Gerhard, Auserlesene Vasenbilder.
- AZ*: Archäologische Zeitung.
- BASOR*: Bulletin of the American Schools of Oriental Research.
- BASPR*: Bulletin of the American School of Prehistoric Research.
- BCH*: Bulletin de Correspondance Hellénique.
- BdI*: Bulletino dell' Istituto.
- BJ*: Bursian's Jahresbericht.
- BLund*: Bulletin de la Société Royale de Lettres de Lund.
- BMFA*: Bulletin of the Museum of Fine Arts, Boston.
- BMMA*: Bulletin of the Metropolitan Museum of Art, New York.
- BMQ*: British Museum Quarterly.
- BPI*: Bulletino di Paleontologia Italiana.
- BrBr*: Brunn-Bruckmann, Denkmäler.
- BRGK*: Berichte der Römisch-Germanischen Kommission des Deutsch. Arch. Instituts.
- BSA*: Annual of the British School at Athens.
- BullComm*: Bulletino della Commissione Archaeologica Comunale di Roma.
- BZ*: Byzantinische Zeitschrift.
- CAH*: Cambridge Ancient History.
- CIL*: Corpus Inscriptionum Latinarum.
- CP*: Classical Philology.
- CQ*: Classical Quarterly.
- CR*: Classical Review.
- CRAI*: Comptes Rendus de l'Académie des Inscriptions et Belles-Lettres.
- CVA*: Corpus Vasorum Antiquorum.
- CW*: Classical Weekly.
- Δελτ*: 'Αρχαιολογικὸν Δελτίον.
- DLZ*: Deutsche Literaturzeitung.
- Εφ*: 'Αρχαιολογικὴ Ἐφημερίς.
- FR*: Furtwängler-Reichhold, Griechische Vasenmalerei.
- FuF*: Forschungen und Fortschritte.
- GGA*: Göttingische Gelehrte Anzeigen.
- HarvSt*: Harvard Studies in Classical Philology.
- IG*: Inscriptiones Graecae.
- ILN*: Illustrated London News.

AMERICAN JOURNAL OF ARCHAEOLOGY

- JAOS*: Journal of the American Oriental Society.
JdI: Jahrbuch d.k.d. Archäologischen Instituts.
JEa: Journal of Egyptian Archaeology.
JHS: Journal of Hellenic Studies.
JOAI: Jahreshäfte des Oesterreichischen Archäologischen Instituts.
JRAI: Journal of the Royal Anthropological Institute.
JRAS: Journal of the Royal Asiatic Society.
JRS: Journal of Roman Studies.
LAAA: Liverpool Annals of Archaeology and Anthropology.
MAAR: Memoirs of the American Academy in Rome.
MDOG: Mitteilungen der Deutschen Orient-Gesellschaft.
Mél: Mélanges d'Archéologie et d'Histoire.
MJ: Museum Journal of the University of Pennsylvania.
MonAnt: Monumenti Antichi.
MonInst: Monumenti dell' Instituto.
MonPiot: Monuments et Mémoires pub. par l'Acad. des Inscriptions (Fondation Piot).
MJb: Münchner Jahrbuch der bildenden Kunst.
NJ: Neue Jahrbücher für das klassische Altertum.
NNM: Numismatic Notes and Monographs.
NS: Notizie degli Scavi di Antichità.
NumChron: Numismatic Chronicle.
NZ: Numismatische Zeitschrift.
OIC: Oriental Institute Communications.
OIP: Oriental Institute Publications.
OLZ: Orientalistische Literaturzeitung.
PEFA: Palestine Exploration Fund Annual.
PEFQ: Palestine Exploration Fund Quarterly Statement.
PM: Evans, Palace of Minos.
PQ: Philological Quarterly.
Πρακτ: Πρακτικά τῆς Ἀρχαιολογικῆς Ἑταιρίας.
PW: Philologische Wochenschrift.
PZ: Prähistorische Zeitschrift.
QDAP: Quarterly of the Department of Antiquities in Palestine.
RA: Revue Archéologique.
RE: Pauly-Wissowa-Kroll, Real-Encyklopädie der Klassischen Wissenschaft.
REA: Revue des Études Anciennes.
REG: Revue des Études Grecques.
RendLinc: Rendiconti della Reale Accademia dei Lincei.
REp: Revue Épigraphique.
RevNum: Revue Numismatique.
RevPhil: Revue de Philologie.
RHA: Revue Hittite et Asiatique.
RhM: Rheinisches Museum.
RivFil: Rivista di Filologia.
RM: Römische Mitteilungen.
SBA: Sitzungsberichte der Berliner Akademie.
SEG: Supplementum Epigraphicum Graecum.
SIG: Dittenberger, Sylloge Inscriptionum Graecarum.
SO: Symbolae Osloenses.
StEtr: Studi Etruschi.
WS: Wiener Studien.
WV: Wiener Vorlegeblätter.
ZDMG: Zeitschrift der Deutschen Morgenländischen Gesellschaft.
ZfE: Zeitschrift für Ethnologie.
ZfN: Zeitschrift für Numismatik.

**SIXTH INTERNATIONAL CONGRESS OF
ARCHAEOLOGY. BERLIN 1939**

The Sixth International Congress of Archaeology will take place in Berlin from the 21st to the 27th of August.

In accordance with the tradition established in previous congresses, emphasis will be laid chiefly on the Greek and Roman civilizations and on their origins and dissemination; in other words, on the Mediterranean countries and such others as were under Roman influence, covering the period from the earliest connection with the ancient Orient to late antiquity.

The management of the Congress is under the direction of the Archäologisches Institut des Deutschen Reiches. Requests for information and enrollments should be sent to the VI. International Congress of Archaeology, Maienstrasse 1, Berlin W. 62.

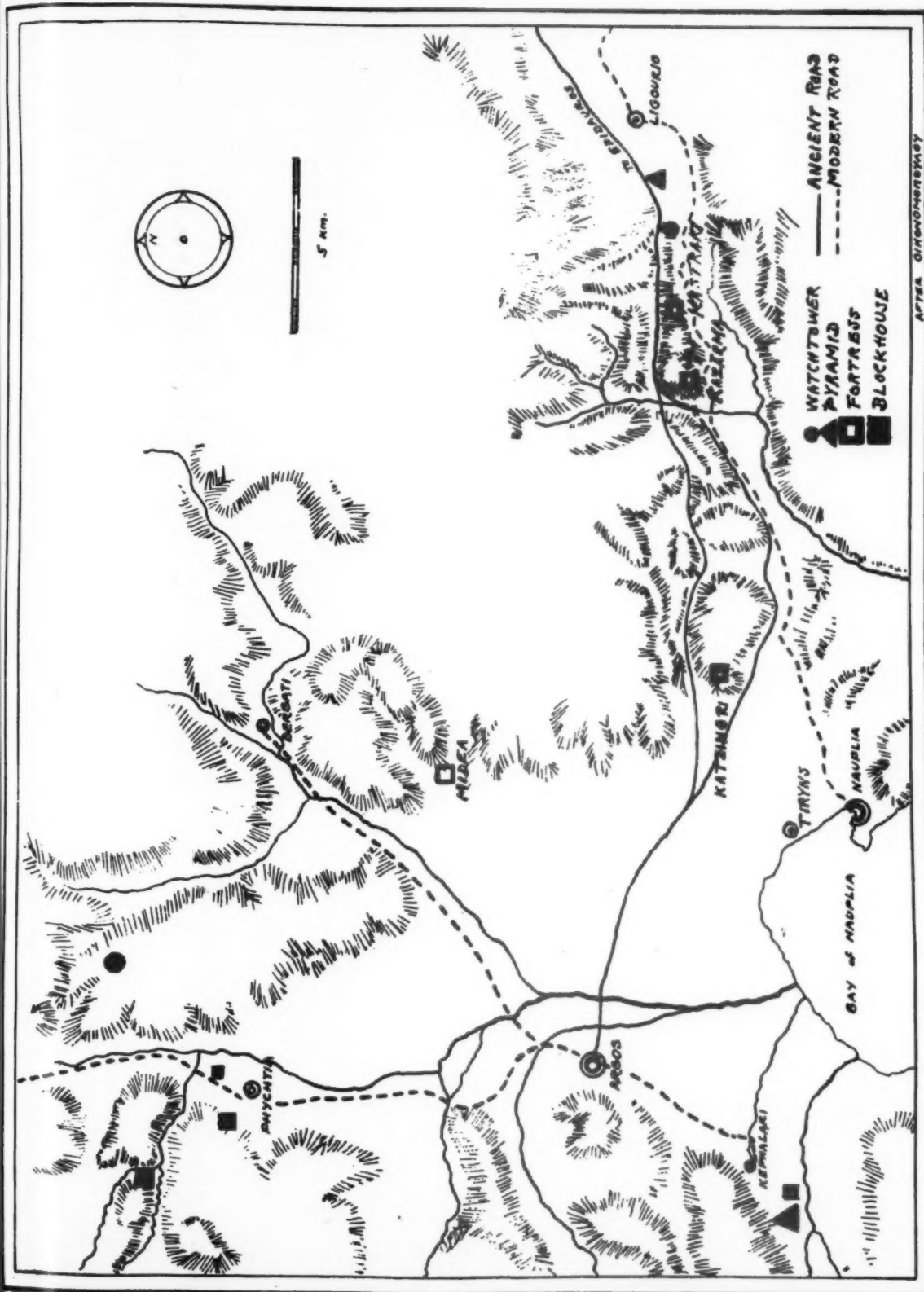


PLATE I.—SKETCH MAP: PORTION OF ARGOLIS



A. — PYRAMID AT KEPHALARIA



B. — FROM ENTRANCE TO PYRAMID AT KEPHALARIA TOWARD GULF OF NAUPLIA
—I.E., EAST



A.—FOUNDATIONS AT MYCENAE STATION



B.—FORTRESS AT PHYCHTHIA



C.—BLOCKHOUSE NEAR NEMEA



A.—ROUND TOWER NEAR NEMEA, LOOKING WEST



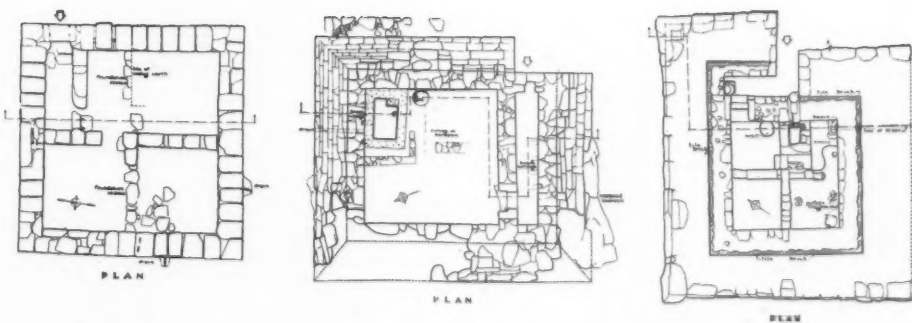
B.—GATE OF THE FORTRESS AT KATZINGRI



C.—BRIDGE ON THE ROAD TO KASARMA



A.—KASTRAKI, THE GATE



B.—LEFT, THE BLOCKHOUSE NEAR NEMEA; CENTER, THE PYRAMID AT KEPHALARIA; RIGHT, THE PYRAMID OF LIGURIO



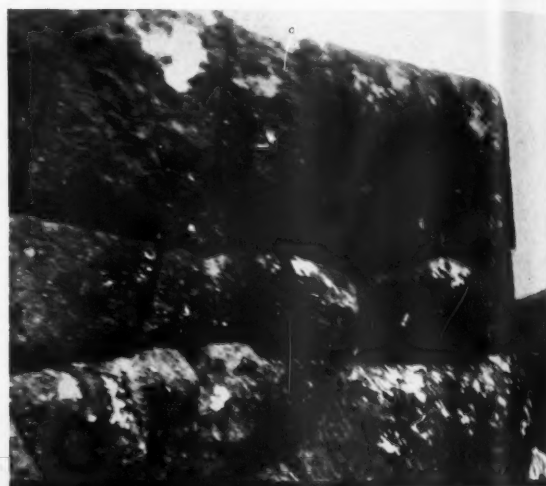
A. — KASARMA



C. — BLOCKHOUSE TOWARD NEMEA



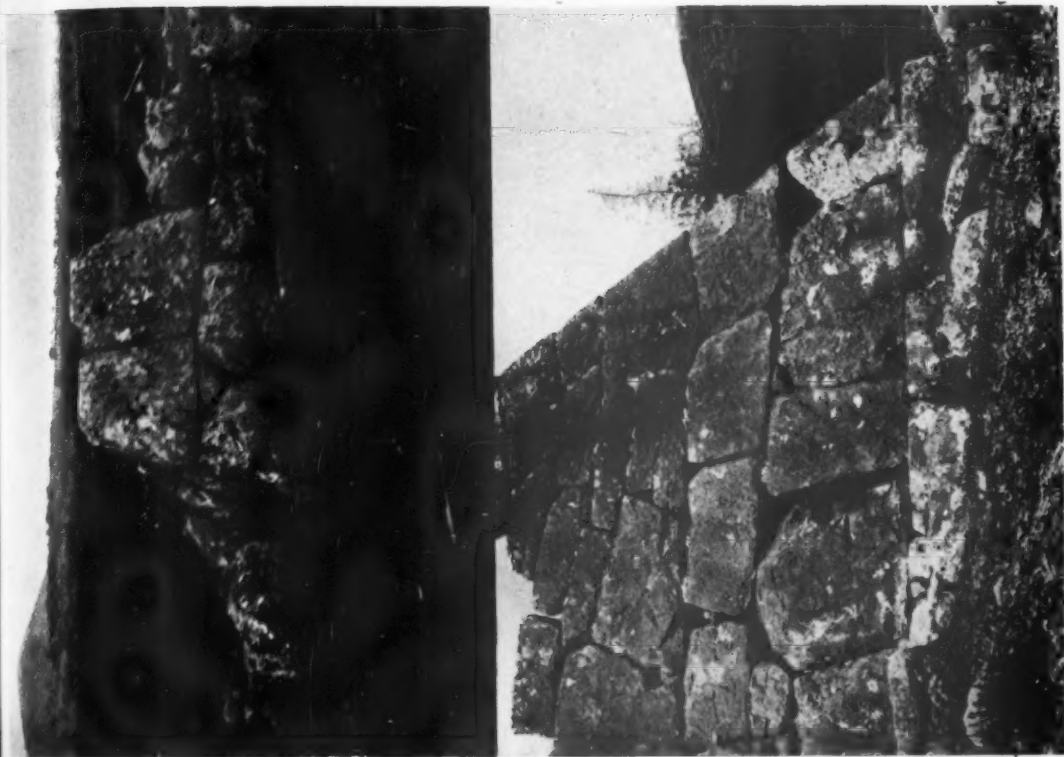
B. — GATES AT KASTRAKI (ABOVE) AND KASARMA (BELOW)



D. — CORNERS OF FORTRESS OF KATZINGRI (ABOVE) AND BLOCKHOUSE AT NEMEA (BELOW)



A. - GATEWAY AT KATZINGRI



B. - PYRAMIDS AT LIGURIO (ABOVE) AND KEPHALARIA (BELOW)